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ELIMINATION OF POLITICS FROM PUBLIC HEALTH WORK*

W. S. RANKIN, M.D.
Field Director, Committee on Municipal Health Department Practice, American Public Health Association
NEW YORK

Lifting public health work from a political to a professional plane is largely a matter of standardization.

THREE PROPOSITIONS

I desire to submit, and hope to sustain, three propositions:

1. The appraisal of any piece of public health work will be, and must be, a matter of personal, and frequently biased, political opinion and determination until generally understood and acceptable standards for the appraisal of the work of health departments are established.

A concrete illustration of the aforestated proposition will serve as better support for it than any abstract reasoning. In a recent election in a county where majorities for years have been small, and, as is usually the case under such circumstances, partisan feeling has been intense, a political turnover occurred. As a result of the election and change in political control of the county, it was generally assumed that all appointive offices would be filled by new officers of the same political adherence as the newly elected county officials. The whole-time county health officer of that county voted in that election, as in previous elections, with the defeated party. He was an exceptionally efficient health officer, but, according to the party in control, he had used poor political judgment and "voted wrong" in the election, and therefore, with other appointive officers of the preceding administration, was to be replaced by an officer whose taste was more in harmony with the new political control. To replace one man with another is not difficult; but, in the particular case of the county to which reference is made, there was something else very much more difficult to replace than an officer, to wit, a record of work. There was a record of what the health officer had done. It was an exact record, a record susceptible of expression in figures. It was a verifiable record, a record so kept as to identify each individual piece of work. Nevertheless, if we stop here, it was a record about which individual judgment might differ as to the value of the work recorded. But, what is of great importance in this instance, it was a comparative record, comparable with similar records for twenty-five other counties. It was possible to reduce the work of the twenty-five counties to a common denominator of service and carefully to compare one county with another and with the average. Be it noted that comparative records that permit of close or exact comparisons are to all intents and purposes standards of measurement. Therefore, the work of the health officer in the politically unstable county could be weighed. It was weighed. It was found to be the third best piece of county work in twenty-five counties. I repeat for emphasis that, while officers are easy to replace, exact verifiable comparative records of excellence are very difficult to replace. It was pointed out to the newly elected county authorities that there might be serious danger of political embarrassment to them in the next election if they replaced the officer and failed to replace his record; that there was a double responsibility which they assumed in reorganizing the health department—not only a responsibility for replacing an officer but also a more important and difficult responsibility of replacing a record. Accepting this point of view, and realizing the difficulty of replacing, or even maintaining, the comparative record of work which the health department had achieved, an intensely partisan, Democratic board of county authorities reelected a full-time Republican health officer.

The lesson which this little story is intended to impress is this: that as long as political authorities have to deal with officers, they can retain or replace them with only slight political embarrassment; but, when they have to deal with records of work which possesses two qualities, (1) verifiability and (2) comparability, their main responsibility shifts at once to the maintenance of records of work, and political and personal considerations are submerged in view of this greater responsibility.

Standardization of public health work means lifting such work from a political to a professional plane.

2. Standardization of anything consists in the substitution of group judgment, exact, often numerically expressed, for individual opinion.

Vocal sounds were defined and given group expression and meaning, whereupon language, spoken and then written, came into existence. Barter was replaced by national and interntional currency when group judgment standardized and coined values. Weights and measures of all sorts and for all purposes are but expressions and definitions of standardized values in terms of group judgment. And so group judgment has been substituted for individual opinion, and we have educational standards, standards of intelligence and moral standards, without which academic work would be chaotic. The whole course of civilization may be charted and may be measured by the development of standards, which, I repeat, is an expression and substitution of group judgment for individual opinion.

* Read before the Section on Preventive and Industrial Medicine and Public Health at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

3. An exact numerical expression of group judgment of health officials as a substitute for individual opinion in measuring and appraising public health activities is entirely practicable.

In undertaking an expression of group judgment by the construction of standards for appraising health work, it is perhaps best to begin as we would in building a house, by first clearing the ground of all material that cannot be used. We begin by throwing away, as a basis of standardization of health work, provisions for work, in the form either of appropriations or of personnel. The fact that provisions are made for something is no guarantee that that something will be done. Moreover, one city may do a better piece of health work than another city which has twice its appropriation and personnel.

Next, we must exclude, as forming any basis for standardization, the form of health organization: whether the health officer is a commissioner or elected by a board, whether civil service is used or not used, etc. The kind of official machinery that is used is not essential. One person will get more service out of a Ford than another does out of a Marmon. It is not the form of organization that a city uses, but what it gets out of it that must be used as a basis of standardization.

Again, we cannot use mortality rates as a basis of standardization, and for this reason: mortality rates are tremendously influenced by variable factors over which a health officer has no control, as, for example, age distribution, race distribution, proportion of industrial population, and economic conditions. Mortality rates may be used to compare health conditions but not to compare health work.

Further, we cannot use methods of work as a basis for constructing standards. Methods, the way an individual or group of individuals have of doing things, should never be standardized. Variation of methods should be encouraged. It is not how health officers and health departments do, but what they do that affords a proper basis for standardization or measurement.

After clearing the ground, it may be asked, What remains out of which we may construct standards? We have left the essential results of health work. The term "results" is distinguished from provisions, that is, budget and personnel, from form of organization, from methods and from mortality rates. As here used, the term is intended to include, for example, under communicable diseases: (1) the number of cases reported as compared with the number of deaths from certain diseases, as ten cases of typhoid for each death, fifteen cases of diphtheria for each death, fifty cases of scarlet fever for each death, 100 cases of measles for each death, etc.; (2) the average number of follow-up visits by nurses and inspectors for each case reported; (3) the office study given communicable disease work as indicated by a definite number of communicable diseases chronologically charted, by a definite number of communicable disease shown on spot maps, by a definite number of communicable diseases for which there were kept case cards; (4) the use of the standard procedures of isolation and quarantine as laid down in the committee report of the American Public Health Association for communicable disease control; (5) the percentage of communicable diseases hospitalized, as 40 per cent. typhoid, 25 per cent. diphtheria and 25 per cent. scarlet fever; (6) the percentage of the population vaccinated against smallpox, and (7) the percentage of children immunized against diphtheria. To illustrate further: Under the general title: venereal disease control, the measuring results would be: (1) the number of cases per hundred thousand population reported by the medical profession, an indicator showing the cooperation of the profession with the health department; (2) the number of cases per hundred thousand population of incompletely treated venereal disease which are returned by the health officer to the profession for further treatment, or quarantined, indicating the cooperation of the health department with the profession, and (3) the number of visits per hundred thousand population to the venereal disease clinic. And to illustrate further: In tuberculosis we could use as results: (1) the number of cases reported for each death; (2) the number of nurses' visits to homes with cases of tuberculosis per hundred thousand population; (3) the number of visits per hundred thousand population to the tuberculosis clinic; (4) the hospital days' treatment per hundred thousand population; (5) the number of children in preventoriums per hundred thousand population; and (6) the number of children in open air schools per hundred thousand population. To illustrate further, with results to be used for measuring the efficiency of medical inspection of schools, we could take (1) the number of defects found per thousand children enrolled; (2) the percentage of defects corrected, and (3) the percentage of enrolment in special classes. And so I might continue indicating results that could be used for standardization purposes in the various important health problems with which the health department is concerned, but enough has been said by way of illustration.

In selecting results on which to base group judgment with respect to determining the efficiency of a health department, the purpose should be to distinguish between results that are means to ends, and results that indicate end-products or objectives. The latter class of activities should be selected and the former class eliminated to as large an extent as possible.

It is not necessary, in determining a numerical index of efficiency for a health department, to select all results of all problems with which departments are concerned. If I may be permitted to return for illustration to my own country, one does not, in sampling a bale of cotton, tear the entire bale to pieces and examine each small bit and fiber of cotton; it is enough to cut the bale in three or four places and to take samples and pass judgment on the quality of the fiber of the entire bale. We are not endeavoring here to construct scales that weigh in milligrams but to construct a much cruder weighing device, but one which, for all practical purposes, will answer our needs.

The next step, in giving expression to group judgment in exact or numerical form, would be to group and classify the results which it is intended to achieve under each of the important problems with which health departments are concerned. Following the classification and listing of items or results under each important problem of health departments, we would next assign numerical expression of professional or group judgment; that is, a weight, to each problem, which would indicate its relative value. To illustrate: Using 1,000 points as a basis of rating, we might assign the following weights to the different problems of health departments: communicable disease control, 235 points; venereal disease control, 50 points; tuberculosis control, 125 points; infant welfare work, 200 points; preschool work, 25 points; school supervision, 150 points; food sanitation other than milk, 20 points; milk supervision, 50 points;

nuisance abatement, 20 points; vital statistics, 50 points; laboratory, 75 points.

Following the assignment of weights or relative values to the more important problems, we would then distribute the weight under each problem to the results grouped or classified under that problem as a basis for finding its weight. To illustrate, venereal disease was assigned a weight of 50 points. For reporting, we could, for illustration, give 12 of the 50 points; for returning cases of incompleted treatment for treatment, we could give a rate of 8 points; and for clinic attendance, a rate of 30 points. These three rates, 12 plus 8 plus 30, equals the weight of 50. And so we could proceed to distribute the weights of all problems among the results listed under each problem.

One final matter in the construction of a pair of scales or score card expressive of group or professional judgment is the determination of the standards on which a rate is to be determined. To illustrate: We give 12 points for reporting of venereal disease, but what is to be regarded as a standard of complete or satisfactory reports? Let us say, for illustration, the reporting of 1,000 cases of venereal disease per hundred thousand population; and for further illustration, the standard for the return of cases of incomplete treatment might be 50 such cases returned per hundred thousand population; and the standard for clinic treatments per hundred thousand population might be 10,000 treatments.

These standards which could be used should not be theoretical but should be the figures already arrived at by the best departments whose health officers have decided to use group judgment in determining relative values and in influencing program, budget and activities.

I am sure the question has already suggested itself as to what could be done in working into a statement of group judgment, or, if you please, a score card, certain special regional problems, as, for example, malaria in the South, or plague on the Pacific Coast. These special problems could be assigned additional weights to those included in the score card relating to common problems. To illustrate, malaria might be assigned a weight of 100 points. A Southern city, desiring credit for its malaria work, would have to score against a potential of 1,100 instead of 1,000 points. The percentage of the 1,100 points multiplied by 10 would be its rating.

Differences of individual opinion as to the figures that should express relative values in weight and rates make the details of this proposal controversial, but the principle of the desirability and the practicability of formulating professional judgment as to standards and relative values in health work, it seems to me, is not debatable.

It is encouraging to note that already three groups of from eight to twelve city health officials are at work on the construction of a score card, and the setting up of certain standards for its use. These three groups will combine later on in the year into one group and, as a result, there will be a score card for weighing the public health activities of their cities. As soon as a basic score card has been devised, a number of other city health officials will unite, and combine their judgment with that of those who formulated the first score card and accept participation in the many revisions which the score card will, and should, undergo with accumulating experience.

It is also encouraging to know that initial efforts are under way on the part of five states to find a similar weighing and measuring scale for rural work. The outlook for placing health work on a professional basis, where group judgment as to the efficiency of health work will replace political and individual opinion, is bright.

There are two important uses for such a score card as that proposed:

1. To the individual health officer. To him it furnishes the strong support of health officers as a group in dealing with those special interests which insistently project themselves into the construction of health programs. Many of these special interests have a fractional point of view; many are superficial in their understanding of health problems, and are most annoying to health officers through the political influence they sometimes exert in distorting a well balanced health program. Expressed group judgment as to relative values would be a sure defense against such influences. Another service to the individual health officer is that such a score card would afford him a basis of group judgment and support for formulating his program, setting up and securing his budget, and for appraising at any time the work of his department. The individual health officer could use the yardstick of professional judgment whenever it was desirable to do so either for purposes of administration within his department or for information.

2. To the profession of public health workers and to the public. A numerical or exact group judgment as to relative values would afford, after a reasonable length of time, two or three years, for adjustment of programs, a basis for a classification and publication in national journals of the professional standing of health departments. This, of course, would be done only when those entering into the standardization organization authorized it. There might be, for instance, Class A departments consisting of those having a numerical rating of 800 and upward; Class B, with a rating of between 700 and 800, etc. Civic pride and commercial interests would see to it that at least one division of government, particularly of city governments, had a Class A rating.

CONCLUSION

In the last ten or fifteen years, the basis of private practice, medical education, has been lifted from a commercial and to some extent a political level to a professional one. Nothing with reference to private medicine has been of greater value to the profession and to the public than the standardization of medical education. What has been done in the last few years with reference to improvements in private practice through the standardization of medical colleges appears equally possible for improving the work of public practice through the standardization and professionalization of public health activities.

370 Seventh Avenue.

ABSTRACT OF DISCUSSION

DR. WILLIAM C. WOODWARD, Chicago: This paper should be entitled "How to Make a Health Department a More Effective Political Factor." The health officer protected from dismissal by a written record of work was protected only because that record was backed up by the threat, "If you remove this man, we will make you suffer at the polls." And that is politics. In any event, a shrewd officer can so embarrass and insult an appointive subordinate as to compel him to resign, and yet give him no tangible evidence on which to appeal for popular support. Unless the proposed records were kept and appraised by independent, disinterested officers, an incompetent or dishonest health officer could manipulate

them to his own advantage. Moreover, such records, to be effective campaign material, would have to be readily understandable by politicians and others—a condition difficult to bring about. The death record admittedly is not a fair index of efficiency; but is the record of the morbidity rate from venereal diseases, which the writer proposes as one of the indexes of efficiency, any better? The ratio between the number of cases reported and the total number in the community might be, but that ratio cannot be established. Other proposed indexes are similarly open to objection; for instance, the number of visits to tuberculosis clinics and the number of children in open-air schools. The methods followed by a health officer are said to be not a fair index of his efficiency, but it is suggested that the use or nonuse of the methods for controlling communicable diseases, proposed by a certain health organization, is such an index. Why the discrimination? The records proposed, so far as they represented efficiency at all, would represent the efficiency of the health department rather than the efficiency of the health officer. To devise records that will segregate the efficiency of the health officer from the efficiency of his subordinates—records showing his, and only his, intelligence, vision, energy, integrity, courage and capacity for leadership—will prove a difficult task, no matter how clear the facts may be to one who studies the situation unembarrassed by such records.

Dr. V. H. Bassett, Savannah, Ga.: Dr. Rankin has a very practical method. Of course, it is easy to find fault with a score card method. What might well be applicable to one community might with difficulty be applicable to another. Furthermore, I know of no system of measurement that may be more perfunctory than the score card system. The most essential thing about the score card is the man who makes the score, and if I can have Dr. Rankin come to our city again and see whether we have made any progress, comparing his figures on his first visit with those of his second visit, I am sure I shall get even greater value from the method he is applying. His visit has already yielded great results to our community. He left with us, as he has left with other communities, one of these city health examinations in parallel columns, the average, or standard, of American communities and in a column alongside data for our city. Every health officer can find in the reading of these comparative lists material that he can use in placing his work favorably before the community; he can find other data that indicate to him where his faults are. The application of this method is one of great interest. We need two things, especially in cities, to advance our health work: We need standardization of method, and we need some standardization for the health official and for his method of selection. There are those who take the ground that, since we have a representative form of government by virtue of which our officials must be either elected or appointed by elective officers, it is impossible to escape entirely from politics. I think that probably this is true. Therefore, we must adjust our methods so that the political methods are modified in their application to health matters. The essential element of what we term politics is the quid pro quo. This we see in its worst form in ward politics. In its application to conservation of natural resources, this method does not work very well. Do we want it applied to health matters? If not, we must try to secure professional standards of work, professional standards for the personnel.

Dr. John E. Monger, Columbus, Ohio: I believe that the suggestion made by Dr. Rankin is one of the greatest forward steps taken in public health work in recent times. We have educated the mass of people to the good they, either as communities or individuals, should reap from effective health administration. We have taught them to expect great things, and we are, to be frank, not able to deliver. We are in the position of the manufacturer who has oversold his market. What is the solution? First, we must devise means to induce successful physicians to give up their medical practice and devote themselves to public health. Too often, public health positions are sinecures to take care of the senile, the incompetent or the unsuccessful. Good men with the personality and force necessary to lead local public health administration hesitate because of the present uncertainty of tenure. I believe that we have leaned over backward in the matter of training. At least now we know that under present conditions we cannot for years to come hope to get properly trained men in sufficient numbers to meet our needs. Analyze a successful administration, and in nearly every instance it will be seen that those qualities which go to make a successful practitioner are the ones necessary to make a successful county or city health officer. Training is desirable, but it is hopeless to recruit the vast army needed now, whose members are increasing yearly, from so-called trained men. If I were grading a prospective candidate for a position, I should give him 90 for his personality, tract and horse sense which would give him the ability to handle people, and 10 for his other qualifications. We can teach him how to handle an epidemic, run a clinic and operate a laboratory, but that God-given power to handle people cannot be taught. We can get the right kind of men only by giving certainty of tenure. At a meeting of about twenty active, progressive, up-and-doing health commissioners, Dr. Rankin put this proposition to them. They voted unanimously for it, and are now working out the details of their plan. We must teach politicians that a health department is not a political asset but a distinct liability.

Dr. John D. McLean, Philadelphia: The value of a standard for rating the efficiency and ability of the service and of the personnel in the service is measured by the training of those who exercise the function under the standard. I am going to use but one illustration to drive home exactly what I mean, and some of my hearers have either suffered or benefited by that standard. As you all know, when we were in uniform the medical officers were rated under what was called the officers' qualification card. After the war was over and immediately after the armistice was signed, the general staff issued an order that the men who were over 50 years of age, or under 50 rating in the officers' qualification card, should be first relieved from active duty. What happened? In one camp, 85 per cent. of the medical officers were rated under 50. Where was the mistake? Were the doctors according to qualifications under 50? They were not, but the men who rated them had not been properly trained to rate them. Dr. Rankin's standard is a good one, provided he does one thing; that is, train the men that are to do the rating and eliminate that thing which is most difficult to eliminate, the personal feeling.

Dr. Harold B. Wood, Bloomington, Ill.: Unless score cards are used for a competitive basis, they are extremely misleading. Dr. Rankin spoke of malaria. We cannot make a score of North Carolina or South Carolina and compare that with Minnesota. Minnesota has no hookworm and no malaria, but she has trachoma and other problems. One cannot transfer from the score card consideration of malaria and put an equal consideration on trachoma, because the two are not comparable. If score cards are used, they are applicable only for keeping records and not for putting on an evaluation, excepting under a similar condition. If the score card is detailed to the extremely fine body points, then we are going to get somewhere. Consider the score card used at universities. Two of the greatest points to obtain clean milk are the washing of udders and the condition of the dairy, in the dairy department; but the score card makes no reference to concrete flooring. If the other point is considered, the score card gives certain evaluations for cleaning the udders of cows. It says that if the udders are clean, a certain score is to be given. The score enters into the personal opinion, is given a certain leeway; there is a maximum of, for instance, 30. One has the privilege of determining 20 or 25. If that score card specifically says, "Give whole evaluation or nothing," then the total score is applicable to other scores; but when there is no competition, as between health officers and between states, the evaluation amounts to nothing.

Dr. S. W. Welch, Montgomery, Ala.: Dr. Rankin, three years ago, made this proposition to the health authorities of North America in Washington, and we all laughed at the idea. There was not a man who did not see a hundred objections where he saw one thing to endorse in the proposition, and I was among the objectors. I did not catch the import of the suggestion of the yard stick by which we could

measure our work in terms which the people with whom we had to deal could comprehend. There may be a hundred objections to the details of the plan he has suggested, but the principle is sound. Each of us could work out a plan of doing our work, but one needs a common yard stick by which one can measure results and compare accomplishments. I am converted to the idea and have adopted it in Alabama and have found it of immense value.

DR. MATHIAS NICOLL, JR., Albany, N. Y.: I believe that Dr. Rankin's plan is excellent, but I think the title of his paper is not entirely relevant, for it is doubtful whether the plan as outlined will be the means of keeping capable health officers in office when some one with sufficient political power desires to get rid of them. It is all very well to talk of educating local politicians, but most of them do not hold office sufficiently long to be taught the importance of public health. I come from a state in which the cities play politics about as successfully as they do in any state in the union, for we have not been able thus far in the state department of health to set an example of nonpartisanship in public health matters to many of the local communities. It is my opinion that the only way for a health officer to be assured of retention in office is by the education of the public which he serves, for only by public support can he hope to overcome political selfishness and shortsightedness.

DR. W. S. RANKIN, Raleigh, N. C.: Several objections have been raised to the general principle that was laid down. There is this to be said in general with reference to the adoption of standards: No one can point out any standard weight, academic standard or other sort of standard, that did not, when it was first proposed, encounter all sorts of objections. It is so easy to see how things cannot be done and so much more difficult to see how they can be done. Seventy-five years ago, when the proposition to standardize medical practice came up, that is, to license physicians, the newspaper columns of that time furnish interesting reading. It is surprising to find so much opposition to the standardization of the practice of medicine, and that from conspicuous physicians of their day. Good men said that one cannot say this is a good doctor and that a poor one by examination, for there is so much in character and personality and in the emotional make-up of the man, his sympathetic heart, etc., and then, after all, he may know medicine but not be able to express himself. And so they argued about legal standards for the practice of medicine. The grading of papers in the University of Chicago is a standardization and an assembling of group judgment, that is, faculty judgment, as to the mentality of the students and giving them grades and classes acording to a process of standardization. How could our schools run without such an arrangement? In the scoring of dairies, the standardization of milk control was proposed. The old objectors, the people who see obstructions in the way and not the paths between them, pointed out why it could not be done and should not be done. The fact is that it is doubtful whether standardization of any sort was ever proposed to which there were not a thousand objections. It has been pointed out that conditions in various parts of the country are so widely different that standards cannot be set up for making comparisons between conditions in Kentucky with trachoma, on the Pacific Coast with plague, and in the South with malaria, etc. Of course they can. Group judgment can give a relative value and set up standards for trachoma eradication in Kentucky that can be compared through standards set up for malaria, and relative values given to that problem with malaria in Louisiana. Dr. Woodward points out that for a comparative rating and classification of the work of different health officers, it would be entirely impracticable to allow each health officer to audit, rate and classify his own work. Why, of course it would. Standardization always means an umpire, an unbiased central agency to take, compare and classify the fifty or 100 or 200 agencies that have consented to the principle of standardization. Isn't this true of the standardization of medical colleges which is carried out by the great association which Dr. Woodward represents, the American Medical Association? Does one suppose that the standardization of medical education and the classification of medical colleges was adopted without objections and without its being said that it could not be done? And the question naturally presents itself as to whether it is any more difficult to find standards for public health work and base classifications and ratings on such standards than to do a similar thing with reference to medical education.

MAGNESIUM SULPHATE AS A CAUSE OF THE EVACUATION OF THE GALLBLADDER

A CONTRIBUTION TO THE PHYSIOLOGY OF THE GALLBLADDER *

IWAO MATSUO, M.D.
KIOTO, JAPAN

Just as a bomb thrown by a Servian youth caused the great World War, a short footnote in an article of Meltzer [1] gave rise to a great revolution in our conception of the physiology and the pathologic physiology of the biliary system. Lyon [2] has already made many contributions to the study of this phase of physiology at the suggestion of Meltzer, and, pointing out five reasons for his opinion, he has concluded that the so-called B-bile was caused by the evacuation of the gallbladder. Einhorn,[3] on the other hand, explained the same phenomenon, not by the evacuation of the bladder, but by the direct influence of magnesium sulphate on the secreting cells of the liver; he also pointed out five objections to Lyon's view.

The question about to be discussed now is whether the dark B-bile is the content of the gallbladder or of some other organ. Brown,[4] Smithies,[5] Inoué,[6] Whipple,[7] Simon,[8] Sachs,[8] Friedenwald and Morrison,[9] Synott, Levin, Kohn and Niles [8] agree with Lyon, but among his opponents, led by Einhorn, are Crohn, Reiss and Radin,[10] Dunn and Connell,[11] and Bassler, and Luckett and Lutz.[12]

When we consider the various views and theories advanced in the discussion of this question, we discover two defects: (1) The change in normal properties, such as color or quantity, was selected as an indication as to whether or not the outflowed bile was a content of the gallbladder; (2) analogies were drawn from experiments on dogs and held to be true for man.

My fellow-workers and I have been busy on this problem ever since Lyon first reported his observations.[13] Inoué repeated Lyon's test, further developed it, made more extensive observations, and obtained several new data (published in Japanese). As a result of his observations, Inoué agreed with Lyon; i. e., that

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* From the Second Medical Clinic of Kioto Imperial University.

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2. Lyon, B. B. V.: Diagnosis and Treatment of Disease of Gallbladder and Biliary Ducts, J. A. M. A. **73**: 980 (Sept. 27) 1919; Am. J. M. Sc. **159**: 503 (April) 1920; New York M. J. **112**: 23 and 56 (July 3 and 10) 1920; Am. J. M. Sc. **160**: 515 (Oct.) 1920; New York M. J. **115**: 269 (March 1), 456 (April 19) 1922. Lyon, B. B. V.; Bartle, H. J., and Ellison, R. T.: Am. J. M. Sc. **163**: 60 (Jan.), 233, 1922.
3. Einhorn, Max: New York M. J. **113**: 313 (Feb. 19) 1921; **114**: 262 (Sept. 7) 1921; **116**: 188 (Aug. 16) 1922; Arch. f. Verdauungskr. **29**: 243 (March) 1922.
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6. Inoué, K.: Kioto Igaku Zassi **20**: 71, 1923.
7. Whipple, A. O.: Ann. Surg. **73**: 556 (May) 1921.
8. Cited by Lyon (Footnote 2, fifth reference).
9. Friedenwald, Julius; and Morrison, T. H.: New York M. J. **114**: 280 (Sept. 7) 1921.
10. Crohn, B. B.; Reiss, Joseph; and Radin, M. J.: Experiences with Lyon Test (Magnesium Sulphate Lavage of Duodenum), J. A. M. A. **76**: 1567 (June 4) 1921.
11. Dunn, A. D., and Connell, Karl: Report of Case of Hepatoduodenostomy, J. A. M. A. **77**: 1093 (Oct. 1) 1921.
12. Bassler, Anthony; Luckett, W. H., and Lutz, R.: Am. J. M. Sc. **162**: 674 (Nov.) 1921.
13. Lyon (Footnote 2, fifth reference).

magnesium sulphate causes the evacuation of the gallbladder.

Now, we have succeeded in proving that magnesium sulphate actually evacuates the gallbladder, first by the injection of a foreign substance into the bile as an indicator, and secondly, by direct observation with the use of the duodenal tube in laparotomy.

It is well known that, in the typhoid bacillus carrier, the main place of retention is the gallbladder; this is also proved surgically. Hara and Shibata repeated the duodenal drainage (Lyon's method) in typhoid bacillus carriers several times, and every time they proved the presence of the bacillus in the form of a pure culture only in the so-called B-bile; in the duodenal content, sometimes only a few typhoid bacilli were found, and sometimes none at all. This finding strongly indorses the opinion that the B-bile is normally the content of the gallbladder.

Nagai cultivated bacilli taken from both the B-bile and the punctate of the gallbladder of the same patient at operation. Such opportunities were offered in eight cases.

It is quite obvious, according to Table 1, that in all cases except one (Case 5), the identical bacilli were found both in the B-bile and in the gallbladder content. This fact also furnishes a very strong reason for insisting that B-bile is normally the content of the gallbladder.

Table 1.—*Comparison Between Bacilli Taken from B-Bile and Bacilli Taken from Gallbladder Content*

Cases	Diagnosis	Bacillus from B-bile	Bacillus from Punctate
1	.....	Bacillus coli	Bacillus coli
2	.....	Bacillus coli	Bacillus coli
3	.....	Bacillus coli	Bacillus coli
4	.....	Bacillus coli	Bacillus coli
5	.....	Bacillus coli	Bacillus coli
6	.....	Streptococcus Pyogenes-aureus	Streptococcus Pyogenes-aureus
7	Cholecystitis; Distomiasis spatulatum	Bacillus coli Bacillus lactis-aerogenes	Bacillus coli Bacillus lactis-aerogenes
8	Cholelithiasis	Bacillus coli	Bacillus coli

Tada and Nakashima investigated the manner of the outflow of bile by the aid of a dye (Azorubin S), using 4 c.c. of a 1 per cent. azorubin S solution, which is injected in the median vein of the arm. Five minutes afterward, magnesium sulphate solution is injected through the duodenal tube in order to relax Oddi's sphincter and to obtain the resulting outflow of bile. The red bile is recovered from the tube in a few minutes, the average time being seventeen minutes in twenty-one healthy persons. Gradually, the degree of redness in the bile decreases, and, after three hours, magnesium sulphate solution is instilled; then the deep-red-stained bile is seen again. This phenomenon, that is, the appearance of the second red bile by the second magnesium instillation, cannot be seen in some cases of cholelithiasis, a condition in which the gallbladder does not function, as well as in cases in which the gallbladder has been removed. This second, deep-red-stained bile is nothing but the content of the gallbladder, which is stored and concentrated in the bladder during the time and is evacuated with the use of the magnesium sulphate.

Lyon [13] states that he well remembered his intense disappointment in 1919 in his failure to demonstrate Meltzer's law in his first experiment on a patient operated on by Dr. George G. Schwarz, and he confessed that his belief in the fundamental soundness of this method was shaken until he had had time to think.

Bassler and Luckett [12] also failed to secure proof of the contraction of the gallbladder in situ by the instillation of magnesium sulphate into the duodenum in ten cases in which operation was performed.

Sachs [8] was the first to succeed in visualizing a gallbladder evacuation. I will quote here the complete description of Lyon in order to make the matter clear:

> In the case of Mrs. A. H., referred to by Dr. G. Simanek, medical drainage three days prior to operation showed A-bile of a light golden yellow; B-bile, a static bile; C-bile, a light lemon yellow. Through the kindness of Dr. Simanek I [Sachs] was permitted to pass a duodenal tube before she was anesthetized. The gallbladder was exposed and found to be fairly well distended, and before any exploration was made, 50 c.c. of a 33⅓ per cent. solution of magnesium sulphate was introduced directly into the duodenum through the tube. In three minutes, bile started to flow. In five minutes, we began to get a real dark golden bile (typical B-bile), and the distended gallbladder gradually collapsed. I might compare this to the collapse of a balloon from which the air is released. (No contraction was observed.)
>
> The gallbladder was then removed in the usual manner, and the bile in our collection bottle was apparently the same as that obtained from the removed gallbladder, only in greater dilution. I grant that this was done under anesthesia and hence open to some objection; however, I offer it for what it is worth.

This apparent discrepancy gave to Lyon the explanation that not every individual is possessed of the same degree of visceral neurologic stability; that is, that the necessary anesthetic dose capable of obtunding or abolishing the visceral physiologic reflexes in one person might not do so in every person.

After I had succeeded in proving, through the instillation of magnesium sulphate, that there was a gallbladder evacuation into the duodenum in laparotomy, I found that Pribram [14] also had succeeded with the same procedure, made at the suggestion of Stepp; in his experiment, however, Witte's peptone solution was employed.

"Einhorn's duodenal tube was inserted before the operation; then a typical yellow-colored liver bile flowed out, and the abdomen was opened under ether narcosis. After the olive was ascertained to be in its proper position, 20 c.c. of a 10 per cent. Witte peptone solution was introduced through the duodenal tube, and a dark, thick, oily bladder bile was recovered through the tube. The gallbladder contracted distinctly, and after several minutes a yellow liver bile again ran out."

Thus, while Sachs could not see the evident contraction, Pribram succeeded in observing a very distinct contraction. There is a considerable difference between the results of these two observations. Bassler, Luckett and Lutz, in their experiments, were unable to witness this phenomenon. Certainly, for the definite solving of this confusing problem, further observations in man are most essential. Assisted by Dr. H. Tsuji, assistant-professor of surgery, I have been able to conduct this somewhat difficult investigation.

REPORT OF CASES

Case 1.—F. S., aged 37, according to the diagnosis made previous to operation, had a tumor in the left liver lobe. At operation, Oct. 27, 1923, a gallstone was found in the liver. As the disappointments resulting from operations performed by Lyon and others are explained by the fact that narcosis was induced, I wished to avoid this factor; not only was the patient not put under general narcosis, but also the pantopon-scopolamin solution was not injected. The abdomen of the patient was opened after Kocher's technic under

14. Pribram, E.: Klin.-therap. Wchnschr. 2: 1590, 1923.

local anesthesia only, produced by procain-epinephrin. By means of the usual incision, the gallbladder, which was as large as a goose egg, was exposed; it was so greatly distended that the small blood vessels were scarcely visible.

Two hours before the operation, the duodenal tube was given to the patient, its proper location being determined by the roentgen ray.

The gallbladder was 7.5 cm. in length, measured from the point at which the gallbladder was attached to the inferior surface of the liver, and 4.5 cm. in breadth. During the operation, the duodenal content mixed with the typical bright yellow bile was flowing out. Then 40 c.c. of a 33 per cent. magnesium sulphate solution was introduced into the duodenum through the tube. Five minutes afterward, the typical dark brown bile, the so-called B-bile, began to appear; the amount was 80 c.c. Finally, after thirty-five minutes, the bright yellow bile ran out again.

At first the gallbladder was entirely filled, and it seemed so expanded that the blood vessels could not easily be seen. However, as the magnesium sulphate was given, and the dark, thick bile gradually dribbled out, the blood vessels became quite visible, standing out thickly; the gallbladder was no longer expanded, and, gradually decreasing in size, it was reduced at last to 4 cm. in length and 2.7 cm. in breadth. The so-called contraction was not observed, nor did the bladder collapse like a balloon from which the air was released, according to the description of Simanek. Rather, the size of the gallbladder decreased in an instant; estimated merely by the eye, the organ became one-fourth its previous size.

Forty cubic centimeters of a 1 per cent. azorubin S solution was then injected into the gallbladder, which almost resumed its original size. This procedure was painful to the patient. The organ, however, did not become nearly so large as before, being 5.5 cm. in length and 4.5 cm. in breadth. During this procedure, the bile from the duodenal tube had no trace of any red color. Forty cubic centimeters of a 33 per cent. magnesium sulphate solution was then sent through the tube again, and this time it was observed that the gallbladder contracted very clearly and that almost all the dye solution was evacuated in a short time.

Judging from these results, I believe that, beyond any question, the bile flows out from the gallbladder into the duodenum by reason of the local application of magnesium sulphate. Table 2 shows the details.

CASE 2.—Z. O., aged 25, was operated on, Feb. 14, 1924, for chronic appendicitis. Under the same conditions as those stated in Case 1, observations were made with the assistance of Dr. Tsuji. Before the operation the olive was ascertained by means of the roentgen ray to be in its proper position; but from the time that the gallbladder was exposed, the bile ceased to flow out, and the instillation of magnesium sulphate solution did not bring about the appearance of the bile. Then it was found by palpation that the olive was far from the proper position required; i. e., in the ascending part of the pars horizontalis inferior duodeni. When the olive was withdrawn to the proper position, near the papilla of Vater, the gallbladder was filled with 35 c.c. of a 1 per cent. azorubin S solution, and the bile that ran out was not stained red. The instillation of 40 c.c. of a 33 per cent. magnesium sulphate solution was made, and two minutes afterward bile, colored deep red by dye, began to flow out; in the first five minutes, 45 c.c. was recovered, and in the next five minutes 42 c.c. The patient vomited a deep red bile. At this time, the gallbladder became small, although nothing like contraction could be observed to be taking place.

From this case the following two facts can be stated: First, that the instillation of magnesium sulphate into the inferior horizontal part of the duodenum does not have any effect in causing the gallbladder to evacuate, and second, that the outflow of the dye, which is introduced into the gallbladder (also illustrated by Case 1), follows the introduction of magnesium sulphate into the duodenum.

SUMMARY

From these facts it may be very naturally concluded, I believe, that when a magnesium sulphate solution is introduced into the duodenum in the case of a healthy gallbladder, the bile reservoired there and consequently concentrated, dark and thick, is ejected into the space of the duodenum by the relaxation of Oddi's sphincter; under such conditions the contraction of the gallbladder occurs simultaneously. Sometimes, the B-bile starts to flow out because of the pressure of the bile stored in the gallbladder, and the obvious contraction cannot be seen.

Up to the present time, many opinions have been offered and discussed in vain, because those who have presented them selected as an indicator the change in the color or the amount of bile, both of which are characteristics of normal bile. Since the change is occasionally only gradual and not striking, there can arise numerous questions. At present, we can conclude that the dark, so-called B-bile is truly the content of the gallbladder. Employing a foreign substance as indicator, i. e., the typhoid bacillus in a typhoid bacillus carrier, the bacilli are found in the so-called B-bile and in the punctate of the same gallbladder.

Finally, I have observed with my own eyes that the fully expanded gallbladder becomes small, and I have noted the simultaneous recovery of the dark B-bile through the tube by means of the instillation of magnesium sulphate solution. Furthermore, I injected the dyestuff into the gallbladder, and this was also ejected in an instant by the intraduodenal application of magnesium sulphate.

Indeed, I am the first to have succeeded in visualizing, in the human body, the ejection from the gallbladder, by the action of magnesium sulphate, of the dye previously injected into it; i. e., I have demonstrated that the dye introduced into the gallbladder is ejected from it by the action of magnesium sulphate, because no trace of the dye is to be found anywhere else except in the gallbladder. Hence, the red-stained bile recovered must

TABLE 2.—*Experimental Data* *

Time (Minutes)	Bile Amount (C.c.)	Size of the Gallbladder (Cm.) Length	Breadth	Height
0– 5	2.9	7.5	4.5	...
5–10	10.1	...	...	...
5	Instillation of 40 c.c. of a 33 per cent. magnesium sulphate solution; a dark, greenish brown bile began to flow out			
0– 5	12.6	...	...	...
5–10	22.6	4.4	2.7	2.5
10–15	20.3	3.7	2.5	2.2
15–20	14.0	3.5	2.5	...
20–25	2.1	3.5	2.5	...
25–30	3.6	3.5	2.5	...
30–35	4.0	3.7	2.5	...
	The bile became a faint yellow			
35–50	1.8	...	...	...
	Forty c.c. of a 1 per cent. Azorubin S solution was injected into the gallbladder with a syringe			
0– 4	3.0	5.5	4.5	3.7
4– 7	0.4	(not a tinge of red (color))		
11	Instillation of 40 c.c. of a 33 per cent. magnesium sulphate solution; dye began to appear at once			
7–11	9.0	4.5	3.2	2.3
11–12	14.0	...	...	...
12–14	15.6	3.8	2.6	...
14–17	18.7	4.2	2.5	...
17–22*	8.0	...	...	...
22–27	2.6	...	...	...
27–32	3.1	4.0	2.7	...
32–37	1.9	...	...	...
	Pressure was applied on the gallbladder with the fingers			
37–42	6.0	...	...	...
42–47	1.3	...	...	...
	The dye flowed away in a very short time			

* By siphonage, bile ran; for the measurement of its amount, a graduated test tube was used.

indeed be the content of the gallbladder and of no other organ.

For this reason, the result of my observation is fundamental, and it is beyond all contradiction that magnesium sulphate instilled into the duodenum through the duodenal tube actually causes the evacuation of the gallbladder.

A NEW DYE FOR TEST OF LIVER AND BILIARY TRACT FUNCTION

WITH ESPECIAL REFERENCE TO ITS CLINICAL USE *

YOSHINORI TADA
AND
KOKICHI NAKASHIMA
KIOTO, JAPAN

The selection of the best dye for the liver and biliary tract function [1] test is at present an important problem, as testified to by current medical literature.

In 1923, Tada [2] found a great many dyes that were, for the most part eliminated from the liver; some of them come out in the bile in the same concentration as when injected. This fact can be applied for two clinical purposes: (1) for the liver and biliary tract function test, and (2) for therapeutic purposes to the typhoid bacillus carrier and some inflammatory biliary tract diseases.

Disregarding the therapeutic application, we report in this paper the selection of a dye for use in the liver and biliary tract function test and the results of a physiologic study of the bile outflow obtained by the application of this new dye.

DYES NOW USED FOR THE LIVER FUNCTION TEST

The dyes for the liver function test are now selected from methylene blue, indigocarmin, neutral red, phenolsulphonephthalein and phenoltetrachlorphthalein. For the purpose of investigating the elimination in urine and bile, a dog with biliary and urinary fistulas was employed. Seventy per cent. of both indigocarmin and phenolsulphonephthalein appears in the urine, and 20 per cent. of the latter is eliminated in the bile (Table 1); thus, the greater portion of it is excreted in the urine. When the dye is used for the liver function test, there is scarcely enough secreted in the bile to make a consideration of the results worth while. The bile stains are very faint and the degree of elimination in the bile will be directly influenced by a slight disturbance of the kidney function. Table 1 shows the results obtained in a female dog, weighing 8 kg.

TABLE 1.—*Experimental Findings* *

First Appearance Time (Minutes)	In Bile, 8 Minutes: Amount of Bile	In Bile, 8 Minutes: Dye Concentration	In Bile, 8 Minutes: Amount of Dye	In Urine, 4 Minutes: Amount of Urine	In Urine, 4 Minutes: Dye Concentration	In Urine, 4 Minutes: Amount of Dye
8-15....	1.4	8.5	11.1	2.0	110	220.0
15-30....	1.9	21.0	39.9	3.3	83	273.9
30-45....	1.9	28.0	53.2	2.6	37	96.2
45-10....	1.9	22.0	41.8	2.5	18	45.0
10-15....	2.0	17.0	34.0	2.5	13	32.5
15-30....	1.6	8.0	14.8	2.7	9	24.3
30-45....	1.8	4.0	7.2	2.5	6	15.0
45-20....	2.0	...	...	2.3	4	9.2
Amount of dye eliminated in two hours.....	20.0 per cent.			71.6 per cent.		

* Injected dye, phenolsulphonephthalein, 1 c.c.

The liver excretes more methylene blue than the kidneys, but, forming a leukoderivative, it fades and also comes out from the stomach. Its excretion requires a long period of time, and its concentration in bile is extremely weak. When a small quantity of this dye is mixed with bile, the change in the color of the bile cannot be readily seen, and the difference in the color of the normal bile from that of the pathologic bile is very difficult to distinguish. It is also extremely difficult to determine the time of its first appearance in the bile.

The action of phenoltetrachlorphthalein was examined through animal experiment at first; only a small amount (12 per cent.) appeared in the bile, its concentration was very low, and it was easy to decolorize. When this dye is applied clinically, the manipulation is exceedingly troublesome, as far as determining the time of the first appearance is concerned, because it is necessary to add sodium hydroxid, which makes the color of the bile very dirty, the colorimetric measurement difficult, and sometimes impossible. It fades in a very short time, never becoming visible again.

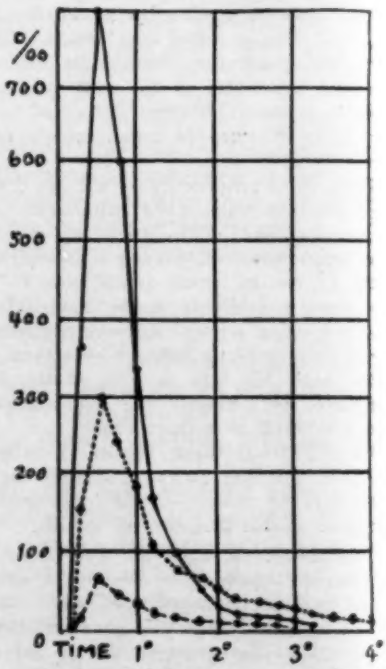


Chart 1.—Eliminating curves of dyes in bile in four hours: solid line, azorubin S, 93 per cent.; dotted line, indigocarmin, 24 per cent.; broken line, methylene blue, 5 per cent.

According to our findings, this dye is not the best one for clinical use. Indeed, as it has been already stated, the dyes now in use for the liver function test are very incomplete and have many defects which make their use inadvisable for clinical purposes.

ADVANTAGES OF AZORUBIN S

The ideal dye for the liver function test must either be one that does not appear in normal bile, or one that is eliminated only by the liver. It is also preferable that the greater part of the dye should appear in the bile, and that the remainder should be excreted in the urine. Among the sixty-two dyes examined by Tada, the dye possessing the first requirement was lithioncarmin; among those possessing the second are found: first red A, benzpurpurin 10 B, congored 4 R, benzo azurin G 38° 6; and for the third there are eosin A, phloxin P, phloxin N. B. B., erytrosin B, scharlach R, ponseau 3 R, and azorubin S (A). The condition under which the elimination of these dyes takes place in the pathologic liver is now being studied, and it may be necessary to conduct many animal experiments before their use can be established in clinical medicine. However, we select azorubin S as the best dye for clinical use. Notwithstanding the fact that there are

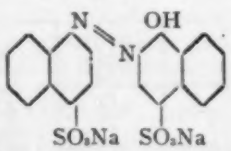
* From the Second Medical Clinic of Kioto Imperial University, Dr. Iwao Matsuo, director.

1. Deakin, V. R., and Graham, E. A.: Functional Liver Tests, Surg., Gynec. & Obst. **36**: 348 (March) 1923.
2. Tada, Y.: The Dye Eliminating Function of Liver and Kidney, Reports I, II, III and IV, Nihon Biseibutsu Gakukwai Zassi, 1923.

many dyes scarcely excreted at all in the urine, this dye, which is eliminated partly in the urine, is selected.

By Tada's experiments it is clearly shown that a dye, which normally is not excreted in urine, does not appear in the urine even when the common duct is ligated, and that the dye that appears in the urine, even in a small quantity, will be eliminated through the kidneys in almost the total amount that was injected after the ligation of the common duct. The amount of dye in the urine per unit of time is not much greater than that found in the normal urine, but the duration of its appearance will become strikingly extended. Therefore, the conclusion is easily reached that, when the change of the secretory function of the liver occurs, or some disturbance of the biliary tract exists, the amount and the duration of the dye elimination in the urine will be changed.

Azorubin S belongs to the mono-azo group, according to its structural formula:



It is a dark red powder, easily soluble in water. When a 1 per cent. aqueous solution of this dye is injected into the ear vein of a dog, only 5 per cent. of the injected dye is eliminated in the urine; the rest of the dye, 95 per cent., is discovered in the bile, and the highest concentration in the bile can be increased to that of the given dye or beyond by means of the various concentrations of the dye that is used. This dye never appears in the gastric, pancreatic or intestinal juices. This is confirmed by four facts: 1. When the dye is injected into the ear vein of a dog with biliary and urinary fistulas, the total amount of dye in the bile and the urine reaches almost 100 per cent. of the dye administered. 2. If 100 c.c. of a 1 per cent. azorubin S in physiologic sodium chlorid solution is injected many times into the ear vein of a dog weighing about 6 kg., whose common duct is tied off by a ligature, and one hour after the last injection the dog is killed, there cannot be found even a tint of the red color in the gastric and intestinal content. 3. During a fractional examination of the gastric juice by means of a Rehfuss tube, this dye was injected intravenously; for two hours after that, red-stained gastric juice could not be found, and it was withdrawn only when the regurgitation of the red-colored duodenal content took place. 4. In one case, the tip of the duodenal tube in the duodenum was confirmed by the roentgen ray, but red-stained duodenal content could not be obtained during the two hours after the intravenous injection of the dye; in the operation, complete obstruction of the common duct was found (two cases). Therefore, we infer from these facts that this dye never appears in the alimentary secretions but only in the bile.

Most of the acid dyes in the mono-azo group are less poisonous than such alkaline dyes as methylene blue. Experiments made by Masuda [3] and Kuraya [4] prove this. To make matters certain, 5 c.c. of a 1 per cent. azorubin S aqueous solution was injected hypodermically or intraperitoneally for two weeks into a mouse weighing about 10 gm., but the animal did not die from the effects of the injection. After the mouse was put to death, a microscopic study of its organs was made, in which we found that the liver and kidneys showed no remarkable changes. Further pharmacologic study will be reported soon by Kuraya. The subcutaneous or intramuscular injection of 1 per cent. azorubin S in physiologic sodium chlorid solution does not induce any disagreeable sensation.

In other words, azorubin S has great advantages over those dyes now employed for the liver function test. They are as follows: 1. It is extremely harmless. The lethal dose for a mouse of this dye and of other dyes now used generally is compared in Table 2 (abstracted from the experiments by Kuraya). 2. This dye is very stable; it does not change color easily. 3. It is very easy to determine the time of its first appearance in the duodenum, as the dye is eliminated in the bile in very high concentration. The curve of the concentration of the dye in bile produced by the injection of a 1 per cent. aqueous solution into a dog weighing about 12 kg. is compared with that of indigocarmin and methylene blue in Chart 1 (Fig. 1). 4. As the great part of this dye is eliminated in bile and only a very small proportion in urine, the slight disturbance of the kidney function does not influence greatly the amount of the dye in the bile. The study of the secretion in urine of the dyes previously mentioned is given in Chart 2. 5. In the normal subject, only a small part of the dye is secreted in the urine; but when a disturbance of the eliminating function of the liver or an obstruction of the biliary tract occurs, the duration of the secretion in urine will be greatly prolonged; it is from its amount in the urine that the condition of the liver and of the biliary tract may easily be ascertained indirectly.

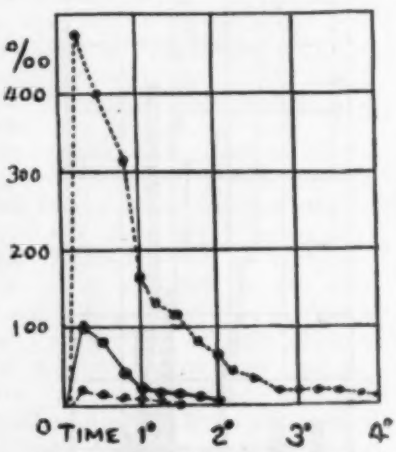


Chart 2.—Eliminating curves of dyes in urine, four hours: solid line, azorubin S, 5.5 per cent.; dotted line, indigocarmin, 54 per cent.; broken line, methylene blue, 1 per cent.

TABLE 2.—*Comparative Toxicity*

Dye	Minimal Lethal Dose Per Gram of Mouse
Azorubin S	3.0 mg.
Phencltetrachlorphthalein	1.0 mg.
Phenolsulphonephthalein	1.5 mg.
Methylene blue	0.5 mg.
Indigocarmin	0.4 mg.

CLINICAL OBSERVATION AND THE RESULT IN THE NORMAL SUBJECT

Since azorubin S aqueous solution is of comparatively great diffusibility, it is rapidly absorbed when it is administered subcutaneously or intramuscularly, but the surest method in any type of disease is intravenous injection, which can exclude the velocity of the local absorption. Hence, we inject 4 c.c. of 1 per cent. azorubin S into the median basilic vein; the amount of injection is limited to 4 c.c.

3. Masuda, T.: Pharmacology of Organic Dyestuffs, Kioto Igaku Zassi **19**: 817, 1922.
4. Kuraya, T.: Pharmacologic Study on the Organic Dyes for Clinical Use, to be published.

Tada's experiment has made clear that the greater the amount injected, the more the concentration in bile can be measured, but the concentration of dye in bile produced by the injection of 4 c.c. is sufficient for our purpose and we never use it in any greater amounts. When the dye is injected into the ear vein of a dog, the bile from the biliary fistula is stained very red within about five minutes; but, as there is no suitable method for determining clinically the time of the first appearance of the dye in the bile, we try to estimate it in the duodenum by the method that has proved most useful. For this purpose, the duodenal tube is most suitable. The patient fasts early in the morning, swallows the tube, and when the olive of the tube reaches the duodenum, a yellowish brown bile will begin to flow. At that moment, the dye solution is injected intravenously, and the time when the stained bile appears minutes after the instillation of the magnesium sulphate solution thick bile, the so-called gallbladder bile, flows out abundantly. The stained bile cannot be seen in the first gush. Then, for seventeen or eighteen minutes after the injection of the dye, the bile is stained a very deep red. At this time, the border is remarkably distinct (Chart 4). As for the difference of the time of the first appearance of the colored flow in the first and second methods, the velocity of the bile outflow through the tube may have something to do with it; but in this Oddi's sphincter plays the most important rôle.

When the first method is used, and the pressure of the bile in the common duct has reached a considerable height, Oddi's sphincter will relax; when the second method is followed, before the stained bile comes to Vater's papilla, Oddi's sphincter has relaxed because of the action of the magnesium sulphate. Thus it is

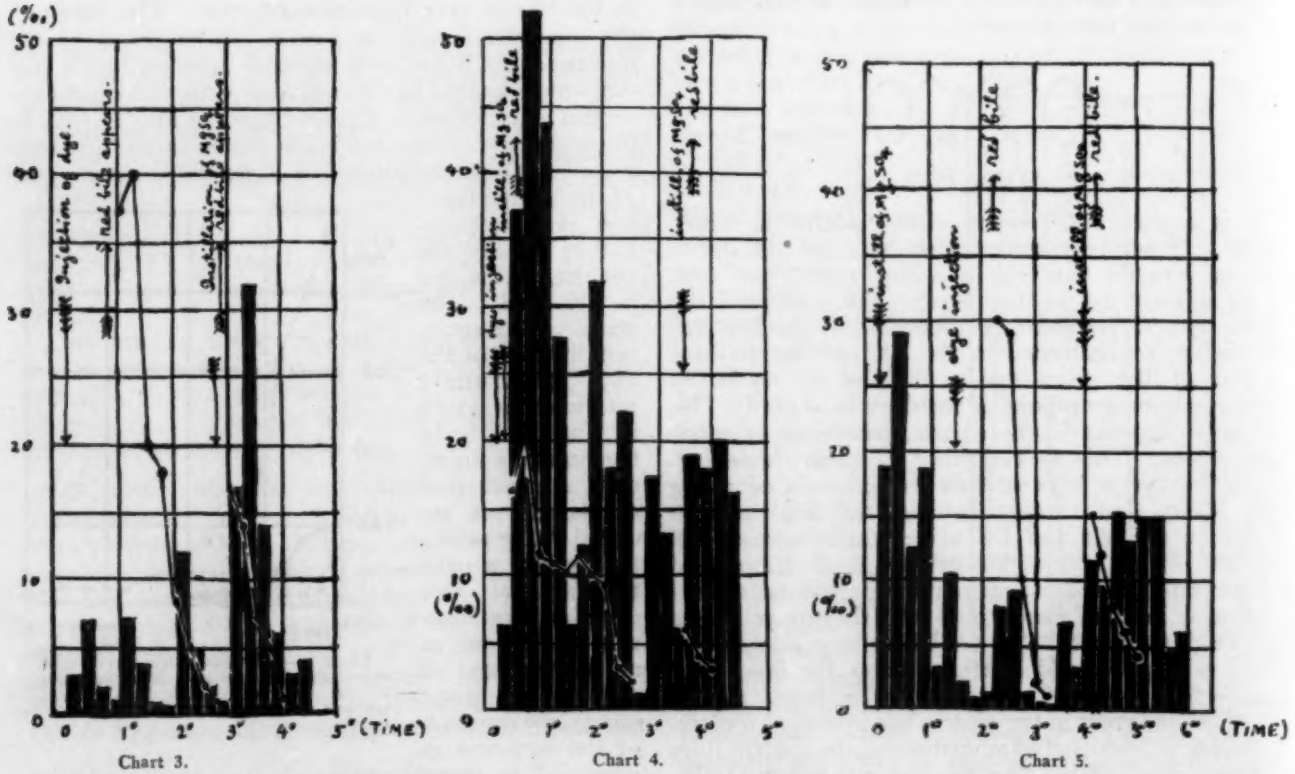


Chart 3. Chart 4. Chart 5.

Results of three series of tests: black columns, amount of duodenal content; curve, concentration of dye.

in the duodenum can easily be determined. If the gallbladder does not exist in the biliary tract and the function of Oddi's sphincter is excluded, by the time of the first appearance of the stained bile in the duodenum, the excretory liver function can be soon estimated. In the normal person, the function of the gallbladder and of Oddi's sphincter cannot be excluded without consideration.

We then apply the three following series of observations:

First, after the injection of the dye solution, the time of the first appearance in the duodenum is observed before anything is done. By this method, the bile is stained deep red, even scarlet, in from thirty to fifty minutes, and its border is in almost all cases very clear (Chart 3).

Second, five minutes after the injection of the dye, 40 c.c. of a 25 per cent. magnesium sulphate solution is sent into the duodenum through the tube to influence the duodenal mucosa directly. In favorable cases, five

that the difference of time previously mentioned can be explained.

Third, 4 c.c. of a 25 per cent. magnesium sulphate solution is at first sent through the tube, and the so-called bladder bile mentioned by Lyon and others is entirely emptied, and the dye solution is then injected at various intervals. In this method, by means of the different lapses of time after the injection of the dye, the time of the first appearance also varies widely. In one case, the injection took place one and a half hours after the instillation of the magnesium sulphate into the duodenum, and the stained duodenal content was obtained in twenty-five minutes; in another case, two and a half hours after the instillation of the magnesium sulphate solution, seventy minutes was required (Chart 5). This fact can be easily understood when the function of Oddi's sphincter is recognized.

We observe the excretion of the dye into the duodenum on the one hand; on the other hand, we measure the amount of dye excreted in the urine dur-

ing the time of observation. This is the carrying out of the purpose previously mentioned of estimating the liver function indirectly by the findings in urine, since the remarkable increase of the total amount of dye excreted in urine is suspected to be a sign of a liver and biliary tract disturbance. A striking difference can be found between man and the dog; the amount of dye excreted in urine is from 5 to 8 per cent. of the given dose in the normal subject, and it takes from six to ten hours for the urine to run entirely free from the dye.

The findings of the bile and urine previously described constitute the summary of the results obtained from forty-two experiments gained from twenty-one patients treated in our clinic, whose livers and kidneys were recognized as completely normal.

Concerning the findings of dye excretion in bile and urine as indicative of liver and biliary tract diseases, a report of the systematic results made by Nakashima will soon follow. Therefore, this paper contains merely the summary of the investigations gained by the application of this method to the normal condition.

APPLICATION OF THE DYE

Many investigations into the function of the gallbladder and Oddi's sphincter have been made, but without any final result. Since the writing of this paper, some new investigations have been reported and many new observations are expected to appear. Since reference to these opinions would have no practical value here, they will not be mentioned. As far as we can see, no use has been made of the eliminating function of the dye from the liver. Indeed, we are the first to have performed this experiment. Believing that this method can be used extensively in clinical medicine in the future, we wish to state here in brief form the method employed in our investigation and the ideas obtained as a result of our observations.

If the function of the gallbladder is tested according to the suggestion of Meltzer and Lyon in a fair number of cases, a difficulty in the explanation of their results is encountered. Of course, there is nothing to indicate positively which portion of the bile, after the instillation of the magnesium sulphate solution, may be taken for the gallbladder content. As to the amount and the color, etc., these cannot always indicate the outflow of the gallbladder content, as they are normal properties, and changes in them are not always made striking by the instillation of magnesium sulphate into the duodenum.

When a phenomenon is explained by the change of the proper substance to the body, the explanation is of significance only when the investigating method is absolutely justified. If the method for observation is not complete, it is only natural that one should hesitate in passing judgment on the results. That is the reason why we wish to try to make more clear the function of the gallbladder and Oddi's sphincter, making use of a substance foreign to the body; for this purpose, the wide application of azorubin S (A) is recommended in clinical medicine.

This method is very simple. Following the intravenous injection of 4 c.c. of the 1 per cent. azorubin S aqueous solution into the patient, who has fasted and has swallowed the duodenal tube early in the morning, the condition of the outflow of the duodenal content is carefully observed. As stated above, in about forty minutes the bile from the duodenal tube is stained deep red, but the concentration of the dye decreases gradually with the passing of time. When it works quickly, the bile after about three hours becomes almost free from stain; after about five hours, it fades. From fifteen to thirty minutes after the fading, the magnesium sulphate solution is sent through the duodenal tube. It will be seen that, from five to ten minutes after the instillation of the magnesium sulphate solution, bile flows from the duodenal tube abundantly, with almost the same concentration as that shown by the stained bile about one hour after the injection of the dye (Chart 3).

This secondary staining of the bile may be thus explained: The blood serum contains the dye so faintly three hours after the injection that it is no longer visible. Therefore, even when the liver cell is supposed to be excited by the resorption of the magnesium sulphate solution, the liver bile cannot be at this time stained so deep a red; when the stained bile in the bile capillaries or in some remote part of the bile duct in the liver is assumed to flow into the duodenum by their contraction, this deep-stained bile cannot be obtained in such a large amount. Logically, consideration must be given to the gallbladder, which exists in one part of the biliary tract and is able to store and concentrate the abundant bile. One part of the stained bile, which is secreted in the liver during these few hours, flows out into the duodenum; but the other part of it is stored in the reservoir, the gallbladder, and comes out into the duodenum first because of the relaxation of Oddi's sphincter after the instillation of the magnesium sulphate solution. This statement is justified by the following two facts:

When laparotomy is performed in man or in the dog, with the intravenous injection of the dye, if the gallbladder is punctured several times with an interval of some minutes—in the dog about six minutes after the injection, and in man from nineteen to thirty-two minutes—the deep red-stained bile will be found in the gallbladder. It is also a fact that if this method is applied in the case of a patient whose gallbladder is extirpated, and the test is made shortly after, the secondary staining of bile cannot be found. In other words, the intravenously injected dye is secreted through the liver and flows for some minutes in the gallbladder. If the outflow of the stained bile into the duodenum is confirmed only in the case of the gallbladder, when the magnesium sulphate solution acts on the duodenal mucosa, this stained bile must be recognized as the gallbladder content.

These facts not only supply evidence against the opinion of the Einhorn school and in favor of Lyon's contentions, but may be a great convenience in daily clinical use, in the proving of the gallbladder content. Because, as in this method a foreign substance is employed as the indicator, the secondary staining of the duodenal content can always be recovered in any case, if the function of Oddi's sphincter is not disturbed, and the gallbladder is able to store the bile.

Even when, with the change in the color of the bile, the outflow of the B-bile cannot be seen, the existence of the bile in the gallbladder can be established beyond question. To prove this, we conducted the following observation: Soon after the injection of the dye into the patient who had swallowed the tube, the magnesium sulphate solution was sent into the duodenum through the tube; after the evacuation of the thick bile, which is stored during the state of hunger and again after a lapse of about three or four hours, the magnesium sulphate solution is injected according to the method previously mentioned, that it may act on the duodenal mucosa (Charts 4 and 5).

When the same method is employed without the injection of the dye, the proof of the bile in the gallbladder for the second time is almost impossible to secure except by means of the bile color, as its stay in the gallbladder is too brief; but as in almost all patients treated by the dye solution previously, the secondary bile staining can be proved, the difficulty of the proof of B-bile is not encountered in any case. Thus, by this method, the outflow of the gallbladder content can be proved almost without exception; when any disturbance in the liver and the biliary tract exists, the secondary staining cannot be proved. Therefore, if, by this method, the gallbladder bile cannot be proved, disturbance of the gallbladder and biliary tract can be presupposed to exist, and there is none of the inconvenience and perplexity encountered in the estimation of the results gained by the original method of Meltzer and Lyon.

This represents the findings of investigations carried out forty-two times, further evidence of which is supplied by Charts 3, 4 and 5.

CONCLUSIONS

1. Methylene blue, indigocarmin, neutral red, phenolsulphonephthalein and phenoltetrachlorphthalein, which are now used for the liver function test, are not suitable dyes for that purpose.

2. As azorubin S (A) is harmless and stable and appears in the bile in a very high concentration, this dye is one of the most suitable for the liver function test made by means of the duodenal tube. The small amount excreted in the urine can be utilized for the indirect measurement of the liver disturbance, as the excreting condition in the urine increases very markedly.

3. Five minutes after the injection of the dye, magnesium sulphate is given; the duodenal content is stained in seventeen minutes, which is the time of the first appearance of the dye in the normal subject. The staining reaction is very distinct and clear.

4. When this dye is applied in the gallbladder and biliary tract function test, it is a very easy and simple matter to obtain an infallible result.

5. After the instillation of the magnesium sulphate solution, the bile obtained is the content of the gallbladder.

Training the Medical Student of the Future.—But while the length of the course at a medical school will be substantially the same as at present, its character will differ in some important respects. With the raising of the standard of science teaching in our public and secondary schools, I should expect that the medical student of the future will enter on his course with a grounding in physics, chemistry and biology which is at least up to the standard now exacted for the first examination in the course leading to the M.B. degree. He will thus gain additional time to devote to the fundamental sciences and the methods of their application in the investigation of disease prior to his admission to the wards. . . . The physiology will be more comprehensive than is now possible, and it will include a good amount of biochemistry and biophysics. . . . By this time it would be realized that it was not humanly possible to cover everything, and that instead of having a nodding acquaintance with several specialties the more excellent way would be to give the student the best possible training in general medicine and surgery, allowing specialization only in those subjects to which the student intends to devote himself in his practice.—Waring, H. J.: The Medical Man of the Future, *Lancet* **2**:690 (Oct. 4) 1924.

THE RETICULO-ENDOTHELIAL SYSTEM IN RELATION TO ANTIBODY FORMATION *

FREDERICK P. GAY, M.D.
AND
ADA R. CLARK
NEW YORK

There is no more important, more considered and less conclusively settled question in immunology than the place of antibody formation in the animal body. Ehrlich has asserted, and it has been rather generally assumed, that each of the innumerable and characteristic chemical groupings in cells has specific affinity for some foreign substance, nutritive or toxic, that may enter the body. And again, Ehrlich assumed that the cell or part of a cell that unites with any particular foreign protein is the potential antibody-former for that antigen (receptor hypothesis).

The general lines of inquiry to determine the seat of antibody formation have been to seek the tissue in which a given antigen is fixed; to determine the locality where the corresponding antibody may first be detected; or to prevent the formation of the antibody either by specific injury (benzene [C_6H_6] roentgen ray), or by extirpation of an organ. It has also been asserted that antibodies may be produced in tissue culture.

If Ehrlich's assumption were correct, we should expect the group of cells responsible for antibody formation to differ with the particular antigen employed. But even with this in mind, no conclusion may yet be drawn as to the source of any particular antibody. Thus, in the evidence obtained by methods that have been outlined, it has been variously concluded that the essential antibody formers are the leukocytes; the leukocyte forming organs, the spleen, the bone marrow and the lymph nodes; the liver, and the capillary endothelium.

We have probably been led astray by the expectation that some particular organ, such as the spleen, or some strictly localized cell group, rather than a more universal tissue, is responsible. Many of the phenomena of general immunity can be better explained on the assumption that some widely distributed cell-type is the essential antibody producer. The condition of strictly local immunity in various parts of the body can be understood only on such an assumption.

The reticulo-endothelial system of cells (Aschoff) fulfils this criterion of wide distribution throughout the body, including, as it does, one of the constituent elements of connective tissue and the capillary and lymph space endothelium, and being related to adult endothelium and the monocytes of the blood. It includes, moreover, the most markedly phagocytic and resistant cells of the body; indeed, its differentiation depends on its ability to take up rapidly and to retain particulate matter and colloidal substances. The undoubted importance of the spleen, the lymph nodes and the liver in the disposal of foreign cells and in antibody formation, that has already been mentioned, would depend on their content of elements that make up the reticulo-endothelial system; and the failure of removal of one of these organs (e. g., spleen) to prevent antibody formation entirely, would depend on the vicarious or increased functioning of other parts of the same system.

* From the department of bacteriology, Columbia University College of Physicians and Surgeons.

It has occurred to others recently, as well as to ourselves, that a crucial experiment to prove the importance of the reticulo-endothelium in antibody formation might be affected by "plugging" or "blocking" the vacuolar segregation apparatus of these cells (clasmatocytes and capillary endothelium) with some indifferent nonprotein colloid, and then attempting antibody formation. Recent work of Migay and Petroff,[1] and particularly of Kusnetowsky,[2] answers the first objection that might be expected to militate against success in experimentation of this sort. The first authors found that carmin injections prevent the subsequent and usual absorption of a colloidal iron solution, and Kusnetowsky similarly found that the fat of egg yolk prevents the absorption of trypan blue by clasmatocytes. These experiments, then, show that the storing of particulate or colloidal materials, which is the peculiar property of these cells, is physical rather than chemical, and that the same segregation apparatus is concerned in any or all forms of phagocytosis by these cells rather than a differentiated series of chemical reactions in the Ehrlich sense.

Standenath[3] and Vanucci[4] have recently reported experiments of a similar sort on antibody formation. Standenath, who tested precipitin formation in rabbits after the use of China ink, found that it was increased rather than diminished. Vanucci, who used both carmin and Wasserblau dye, thought that subsequent agglutinin formation was decreased. These experiments not only disagree, but are each in themselves wholly inconclusive when viewed in detail from the extremely small number of animals involved, and the relatively slight differences in antibody strength between the treated animals and the controls.

In our own experiments on the effect of vital staining on hemolysin and precipitin formation, which we here report in a preliminary fashion, the results are unequivocal. Both rabbits and rats have been subjected to a preliminary "saturation" with trypan blue for a period of about two weeks with almost daily injections intraperitoneally. There seems no evidence from loss of weight or appearance that the animals suffered ill effects from this treatment. The dyestuff was then decreased in amount, but continued daily during the course of the experiment. Washed sheep blood was given in small doses on three successive days, intravenously in the rabbits and intraperitoneally in the rats, and hemolysin formation was tested and compared with that in control animals that had received the blood alone. In the rats, the serum tested five days after the blood injections gave complete hemolysis in dilutions of from 1:2,500 to 1:10,000 in the control animals, whereas in the animals injected with trypan blue it was negative in a dilutions of 1:10 in two rats and positive in a dilution of 1:160 only in two others. In other words, the average difference between the two series was as 75:1. In rabbits, the curve of hemolysin formation was followed more fully. It reached an average maximum titer in the controls of 1:1,666 in nine days, whereas the maximum in the dye animals was 1:140 on the fourteenth day. Similar results have been obtained with precipitin formation. Our experiments with bacterial immunization have so far been indecisive through intercurrent infections and deaths due to the toxicity of the particular bacterial strains employed.

There seems no question from our experiments that antibody formation (at least hemolysins and precipitins) can be almost completely prevented in animals by saturation with a colloidal dye which is known to be selectively stored by the reticulo-endothelial system. This inhibition would seem to be due to a filling of these particular cells with the dyestuff in question rather than any general intoxication produced by the dyestuff itself. It remains to test the effect of trypan blue on the formation of other types of antibodies, to control it with more diffusible dyes which do not remain in the cells of the reticulo-endothelial system, and finally to trace the fate of the injected antigen, before any firm assertion can be made as to the essential rôle of these cells in antibody formation.

1. Migay, F. J., and Petroff, J. R.: Arch. f. mikroskop. Anat. **97**: 54, 1923.
2. Kusnetowsky, N.: Arch. f. mikroskop. Anat. **97**: 32, 1923.
3. Standenath: Ztschr. f. Immunitätsforsch. u. exper. Therap. **38**: 19, 1923.
4. Vanucci, D.: Sperimentale, **88**: 23, 1924.

THE SIGNIFICANCE OF LUMBOSACRAL PAIN (BACKACHE)*

GEORGE MARTYN, M.D.
LOS ANGELES

Lumbosacral pain is not of great compass, nor is it mortal in its seriousness, but it brings more pain and chronic disablement than most of its peers. Backache, in the majority of instances, is a symptom that is curable and belongs to the domain of neurology and internal medicine. The topography of the lesions of the cord and peripheral nerves has been so well worked out by Dejerine and others, and more recently amplified by Sicard, that there is little room for error. Unfortunately, the patient himself is unable to judge pain in a topographic sense, nor can he give pain a quality that will enable us to refer it to definite areas of the cerebrospinal nervous system with any certainty. Because pain is present and persists, it does not necessarily mean that the pathologic cause is in the subjacent nervous tissue. There are, however, certain characteristic symptoms, following lesions of the nerve tissue of the different areas, which are of help in diagnosis, and it is convenient to divide the cerebrospinal system into the following divisions, marked by definite anatomic boundaries.

A. *Peripheral Nerves.*—This area extends from the periphery to the plexus of the spinal nerves. Irritation of a peripheral nerve produces formication, or a sensation of crawling. The pain is paroxysmal and acute. It originates in any violent movement, and dies down after relaxation. It is stabbing in character, and is increased by pressure or palpation. It follows along the nerve trunk, and the patient can outline the nerve trunk by it. The spinal column is not held rigidly, nor is there any deviation from the normal in the constituents of the cerebrospinal fluid.

B. *Plexus.*—The plexus areas extend from the peripheral nerve up to the external opening of the intervertebral foramina. Plexus pain radiates so that the whole adjacent limb is involved. It is easily provoked by pressure over the plexus, and there is a certain degree of rigidity of the spinal column, but this is never very marked. The cerebrospinal fluid is normal.

C. *Funiculus.*—This area extends from the external opening of the intervertebral foramen through the bony canal, up to and including the opening through the dura mater. It includes the junction of the anterior and the

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* Because of lack of space, this article is abbreviated in THE JOURNAL by the omission of several roentgenograms. The complete article appears in the Transactions of the Section and in the author's reprints.

posterior roots lying in this canal. It is both intradural and extradural. Pain is funicular if accompanied by absolute rigidity of the spinal column, as seen in so-called lumbago. The spine is mobilized in a painless position. Percussion or palpation over or near the spine produces pain. The cerebrospinal fluid often shows a slight increase of globulin, and roentgenograms may show bony lesions. The region of the funiculus is very susceptible, anatomically, to infection and injury. The posterior and anterior roots with meninges all meet here, and are abundantly supplied by sensory fibers. These facts are very important to bear in mind. Common sciatica, with scoliosis and fixation of muscles close at hand, is funiculitis of the third, fourth and fifth lumbar and first sacral spinal nerves, while lumbago is bilateral or unilateral funiculitis of the second, third and fourth lumbar nerves.

D. *Radiculus, or Root.*—This area is entirely intradural and extends from the internal opening of the

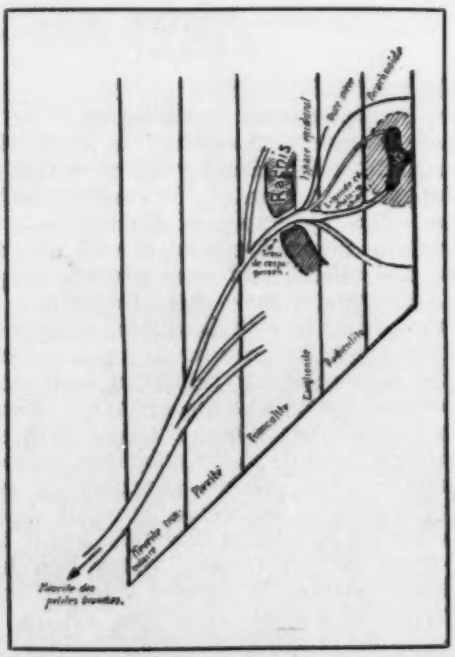

Fig. 1.—Topography of the spinal cord. (From J. A. Sicard.)

dura mater to the cord. Tabes and herpes zoster are classical examples of true radiculitis.

The contrast between radiculitis and funiculitis is of great importance in treatment. Radiculitis is rare; funiculitis is common. Furthermore, radiculitis is not accompanied by rigidity and fixation of the spine, while funiculitis is. In radiculitis, cerebrospinal fluid contains an increased number of cells and globulin, while in funiculitis pleocytosis is infrequent. Also, the reflexes are often decreased in radiculitis, while they are more often increased in funiculitis. I believe, therefore, that common backache is produced by a lesion—usually inflammatory, of the structure that occupies the intervertebral foramen.

I have examined and treated during the last two years, 153 patients suffering from chronic backache, and their records form the basis of this report.

In every case, a complete history with clinical symptoms was recorded, and the following laboratory procedures were carried out: (a) Wassermann reaction with serum; (b) differential blood count; (c) complete urinary examination; (d) in many cases, complete examination of the feces, including a culture; (e) complete examination of the nose, throat and sinuses with, in some cases, stereopticon roentgenograms of the latter; (f) roentgenograms of all teeth, and in case of their complete extraction, roentgenograms of the superior and inferior maxillae; (g) culture of apical granuloma, or extracted teeth.

Classification of the cause of pain in these 153 cases is as follows:

A. *Trauma.*—Two patients; as a result of slipping. Both patients were referred to orthopedic specialists, and were examples of true sacro-iliac disease.

B. *Gallbladder Disease.*—Thirteen patients, all women. The blood examination showed very high lymphocytosis, ranging from 45 to 65 per cent. The pain was in the high lumbar region and was indefinite. It was bilateral. The patient could not localize it. In patients with jaundice, the pain was continual, boring in character and increased by movement. Bernheim's icterus blood index is indicative early in these cases. All this group were relieved of pain by operative procedures on the gallbladder.

C. *Syphilis.*—Eleven patients, ten men and one woman. These patients were in the early stages of locomotor ataxia. There was a moderate pleocytosis. The pain was paroxysmal, very severe, and was conducted down the leg to the soles of the feet. The Wassermann reaction was positive. Under appropriate treatment, pain was relieved to a variable extent.

D. *Focal Infection.*—One hundred and twenty-seven patients, ninety-two women and thirty-five men. I cannot too greatly stress the importance of this group. The number of patients was out of all proportion to the number in the other groups, and I have learned to look on this as the chief cause of lumbosacral pain.

1. Tonsils: Eight patients, all women aged from 21 to 32. All Wassermann reactions were negative. Roentgenograms of the teeth showed no apical absorption. The tonsils were frankly purulent. Blood examinations showed very moderate lymphocytosis, often leukocytosis. The pain was not severe in the lumbar regions. In some cases, it was referred down the leg. Removal of the tonsils entirely relieved these patients of backache.

2. Teeth: (*a*) Periapical abscess; ninety-seven patients. These patients rarely complained of pain or swelling about the diseased tooth, and very often acute backache or painful menstruation were the only symptoms. Roentgenograms of the teeth showed one or more apical abscesses in each instance. In some cases, general malaise with chills and fever were the prominent symptoms.

CASE 1.—Mrs. S., during the summer of 1920, had a severe attack of what was thought to be Balkan fever, while doing relief work in Albania. In September, 1921, she had a severe attack of lumbago, which lasted for three days, during which time she was unable to move. These attacks continued during the following winter. In the summer of 1922, she had continuous attacks of chills and fever, with distressing irritation of the mouth. These attacks were preceded by irritation of the skin. They lasted about three days, and recurred every three weeks. The temperature during the attack usually reached 103 F.

In January, 1923, lumbar pain became more and more distressing. In January, 1924, the teeth were roentgenographed, and several were extracted. In less than a week, all symptoms disappeared, and she has been well ever since. The lymphocytosis was 30.5 per cent.

In some of the most severe cases, only one tooth in an otherwise perfect set was diseased.

CASE 2.—Miss B., aged 26, had backache for two years, with painful menstruation. Removal of the lower right molar was followed by relief of all pain. Lymphocytosis was 35 per cent.

In the case of molar teeth, only one root was at times involved, the tooth being still vital. Cultures of the extracted granuloma or tooth always gave *Streptococcus viridans* as the prevailing organism, and I regard it as the primary pathologic cause of most backache.

(*b*) Partly erupted molars; seven patients. Food collects under the gum around the tooth, with consequent necrosis of tissue and growth of bacteria. *Streptococcus viridans* has been demonstrated in these cases also.

CASE 3.—Mrs. C. had backache for two years, which was very severe in August, 1923, but was relieved entirely by quartz irradiation. In April, 1924, it returned with great severity, and she was unable to sleep or rest, and was in very severe pain. Removal of the lower left molar relieved the pain entirely.

(*c*) Dead teeth. In three cases, single roots were found in the maxilla a considerable time after the teeth had been extracted. These roots, which were entirely buried under the gum, had abscesses around them and were the causative foci of infection.

In eighteen patients, dead teeth were found with no apical abscesses. While reliance on the roentgenographic findings in determining apical abscesses of teeth has been of marked help in most instances, I have been struck with the fact that dead teeth have been allowed to remain because they gave negative roentgen-ray findings. Yet it is not appreciated that an enormous number of bacteria may exist around such teeth before necrosis of the bone has occurred to a sufficient extent to cast a shadow. In this connection, it is interesting that Bumpus draws attention to the same fact in pyelonephritis.

CASE 4.—Mrs. L. was suffering very acutely. The lymphocytosis was 26 per cent. The lower right molar was frankly abscessed, and I advised the removal of the lower right bicuspid, it being devitalized. The molar alone was removed, with relief of pain for two days. Pain then returned with greater severity than before, but on the removal of the devitalized bicuspid, the patient was entirely relieved within a few hours.

It has been my experience that, given pronounced lumbosacral pain with a high lymphocyte count, the absence of evidence of undoubted apical abscess means little. Studies of the teeth as a causal agent of backache must go much farther than study of the roentgenograms.

In considering the last group of patients, three fairly well marked types of backache may be described, depending on the character and distribution of the pain.

1. Twenty-seven patients, fourteen women and thirteen men. The pain was marked in the lower lumbar region and over the back of the ilium and the sacrum, shooting down the back of the thigh and the calf to the heel. The spine was fixed in a painless position. The pain was increased at night, and was paroxysmal.

2. Ninety patients, sixty-eight women and twenty-two men. The pain was fixed and required deep pressure over the lumbar plexus to elicit it. It was not conducted, was boring in character, and was generally one-sided. This pain was in most cases intensely acute. In some, it was accompanied by a moderate rise in temperature and by chills. I especially noticed that these patients were unable to bend, and pain was markedly increased on coughing.

3. Two patients, both women. True coccydinia. The pain was absolutely localized to the coccyx. It was increased on sitting down or getting up. The most comfort was found by sitting on a soft pillow, but the least movement brought back localized pain. Both were relieved by tooth extraction.

DIAGNOSIS

The pain should be located. Its quality, whether conducted or not, and the effect of movement on it should be noted. In women patients, menstrual pain and an increased flow at the period are almost constant symptoms.

The condition of the blood should be studied. The importance of this study I regard as paramount. Any leukopenia with lymphocytes increased to more than 30 per cent., I regard as of great import in diagnosticating the cause of lumbosacral pain. This blood picture, in the great majority of my cases, has meant mouth infection, either of tonsils or teeth. Often this blood examination alone has aroused suspicions that have started study in the right direction, toward either general disease or focal infection. The blood is a delicate and sure guide to a pathologic condition. It is constant in health and surely changed in all toxemias. It has been my unfailing guide.

The last and most important aid to a correct diagnosis is to find the cause. Modern medicine recognizes no duty as complete until this has been done.

TREATMENT

All these cases were chronic, with histories of varying length of treatment, palliative only or wholly unsuccessful. I have had one great advantage in the study of this entire group, because I sought the cause of the pain, and when found I have seen the work of eradication of the foci of infection carried out by my associates. Complete relief of pain has practically always followed these efforts. Backache in a vast majority of cases has a pathologic cause which can be located, and there is only one treatment—removal of the cause.

As a palliative procedure, I use the mercury quartz air-cooled ray. It brought, in some cases, relief which lasted for many months. In others, it simply relieved the pain for a few hours, but in all cases it brought this valuable help—relief of pain until a study had been made of the cause. The length of the first exposure is a very important point. This is important because pigmentation occurs very rapidly, and the maximum penetration is essential for the first irradiation. Pigmentation will obstruct subsequent treatments, and they are never so successful in relieving pain as the first. The ray also has one other advantage. It increases very markedly the general nutrition of the body through the blood stream. This is shown clearly by the largely increased lymphocytosis after its use, and these patients are always exhausted and low in nutrition, as a result of long standing toxemia and pain.

I have had little or no occasion to use drugs of any kind.

906 Pacific Mutual Building.

ABSTRACT OF DISCUSSION

DR. O. S. WIGHTMAN, New York: Have any methods been devised, aside from the roentgen ray, that would indicate as clearly as these pictures have done the many infections about the teeth?

DR. GEORGE MARTYN, Los Angeles: I find that roentgenograms are most satisfactory. I see no way whereby I can so surely diagnose a focal infection as by means of the roentgen ray. I have tried transillumination, but it has not been so successful as radiation.

A PRECIPITIN REACTION OF THE DIGESTIVE MUCOSA OF THE DOG *

LUDVIG HEKTOEN, M.D.
AND
KAMIL SCHULHOF, M.D.
CHICAGO

By simply extracting the mucous membrane of the dog stomach or intestine in physiologic sodium chlorid solution, antigens are obtained that differ in precipitin reaction from the proteins of dog serum.

After two days without food, the dog is etherized, bled to death from the aorta, and thoroughly perfused with salt solution after the cava and portal vein have been opened. The mucous membrane is scraped off, washed in water, and extracted for twenty-four hours in a salt solution to which a little thymol has been added. The extracts are neutral in reaction, and with rare exceptions contain measurable quantities of dissolved protein substances, which can be separated into globulin and albumin fractions by means of ammonium sulphate.

Prepared as described, the extracts of dog stomach or intestine may not give any reactions at all with precipitin serums for dog serum or for the isolated dog serum proteins (euglobulin, pseudoglobulin, albumin); in the cases that give positive reactions for serum proteins, the amount present seems only small, and more often it appears to concern euglobulin, next albumin, and rarely pseudoglobulin.

For precipitin production, rabbits are injected every third day for five or six times, with increasing quantities of extracts. In most instances, the serum of rabbits so injected has been found to be fairly rich in specific precipitin on the fourth day after the last injection.

Usually, this precipitin serum is without effect on dog serum and on dog serum proteins; in fact, the positive results so far have been limited to dog serum in low dilutions of from 1:10 to 1:200. With extracts of stomach and intestinal mucosa, however, positive results have been obtained in high dilutions based on the amount of protein material in solution in the extracts as determined by dry weight. Our results are illustrated in the accompanying table.

Specific Precipitin Reaction of Extracts of Digestive Mucosa of the Dog *

Antigens	Serum of Rabbit Injected with Extract of Gastric Mucosa	Serum of Rabbit Injected with Extract of Ileac Mucosa	Serum of Rabbit Injected with Extract of Colonic Mucosa
Extract of gastric mucosa....	9,600	6,400	4,800
Extract of ileac mucosa.....	3,200	9,600	6,400
Extract of colonic mucosa....	3,200	6,400	12,800
Dog serum	0	160	5
Euglobulin, pseudoglobulin and albumin of dog serum.....	0	0	0

* The tests are made by the contact or layer method, and the figures give the highest dilutions with positive reactions after one hour at room temperature. 0 = no reaction.

Absorption experiments have been made in this way so that each precipitin serum is mixed with an equal amount of extract; after two or three hours, the precipitate present is thrown down by centrifugation, and the clear fluid tested as to its precipitin content with each extract. So far, each extract has removed practically all precipitins in each antiserum; in other words, we have obtained no definite indications that different parts of the digestive mucosa contain distinct antigens. Further efforts may give different results, and the antigenic and other properties of the globulin and albumin fractions of the extracts present interesting problems.

SUMMARY

The results now reported indicate that, in the dog, the mucosa of the stomach, the ileum and the colon contains at least one common antigenic substance that is distinct from the proteins of dog serum.

Whether the mucosa in different parts of the gastrointestinal canal contains still other and different antigenic substances, as well may be expected, cannot be determined by the facts at hand. It seems probable that studies of the digestive tract and of the digestive process with the precipitin and other immunologic methods will prove of interest and value.

* From the John McCormick Institute for Infectious Diseases.

CERTAIN ASPECTS OF ENURESIS *

SAMUEL AMBERG, M.D.
ROCHESTER, MINN.

The salient features of enuresis in childhood are said to be that it constitutes a functional disturbance, which, in most cases, ceases of its own accord during the time of the development from the bisexual state to complete sexual maturity. In a number of instances, perhaps not quite so infrequently as is generally believed, it may persist longer. During childhood, the position of the bladder changes. The vascular and nervous supply of the urinary and genital system make their relationship one of more than mere position, and so it would not be strange if the development and function of one exercised some influence on the other. Guyon,[1] at any rate, emphasized the venous engorgement of the sexual organs on distention of the bladder. Read,[2] as well as McNeal,[3] has shown a relationship between the sexual glands of the male and the creatin excretion. I have found such excretion to be rather high in a 13 year old boy with enuresis. It is usually asserted that boys have enuresis more often than girls, but the opposite has also been reported (Trömmer [4]).

It is often difficult to determine the time of onset of enuresis, and this may be the reason why certain observers state that a preponderance of cases are initiated in fancy, while others believe, with Guyon, that the majority of children acquire the condition after a free interval. In the rather small series of cases in the Mayo Clinic in which reliable information could be obtained, about half of the children had been dry for a period when the condition started definitely. The enuresis may follow colds or some infectious disease, such as scarlet fever, or measles; it may also follow surgical intervention, such as herniotomy or removal of tonsils and adenoids, and in one of our cases it followed a tracheotomy. Even adults may acquire enuresis, coincidentally with a cold; this need not neces-

* From the Section on Pediatrics Mayo Clinic.
* Read before the Section on Diseases of Children at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

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3. McNeal, M. D.: The Male Sexual Gland in the Prevention of Creatinuria, Am. J. M. Sc. **164**: 222-227 (Aug.) 1922.
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sarily be of short duration (Stiefler and Volk [5]), and they need not necessarily have had enuresis during childhood. Sometimes a distinction is made between enuresis diurna and nocturna; this does not seem of extraordinary significance, since a diurnal enuresis may give place to a nocturnal, and vice versa, or they may coexist.

Marked degrees of pollakiuria did not occur in the cases in this series in such numbers as one might expect from Janet's [6] description, which ascribes to pollakiuria an important part in the development of enuresis. In a number of our cases there was at some time or other frequency, but it was not persistent. In a few instances, frequency and urgency were persistent symptoms.

Unusually deep sleep has been associated with enuresis. This was reported only a few times by the parents of our patients. The only more accurate observations I know of are those of Courtin,[7] in whose cases, with one exception, the enuresis did not occur in the time of the deepest sleep. He concludes: "Certain diseases, as for instance vitium cordis, seem to diminish the depth of sleep, and to these belongs the purely functional enuresis nocturna." Much further work remains to be done to clarify this point.

It is well known that some member of the immediate family, or a more distant relative, may be suffering from the same ailment, or some ancestor may have been subject to enuresis. While enuresis as such may not be inherited, it has been considered as a neuropathic hereditary stigma by Pfister,[8] who believes that very minute disturbances are possible in the development of the paths between the bladder and the brain.

The prevalent conception of enuresis is that it is of purely psychogenic origin, a view emphasized by Janet [6] and later writers.[9] Underlying enuresis, there may be a neuropathic or psychopathic constitution, of which the wetting is one of the symptoms. Trömmer, however, could not attribute as a cause any neuropathic factor, either hereditary or constitutional, in 28 per cent. of his cases.[10] Most interesting subdivisions of the neuroses of children have been given within recent years, mainly with the object of choosing the therapeutic measures best adapted to a particular form. The success of suggestive therapy has been advanced frequently as proof of the psychogenic origin of enuresis. Pfister very justly advances against such proof the fact that symptoms of organic diseases may also be influenced by suggestion. This kind of proof, *ex juvantibus*, is extremely dangerous and demands the greatest caution in its acceptance. Whatever the origin of enuresis, whether it is purely psychic, a disease by itself, or only a symptom, it means a deviation from normal micturition. It has been assumed that the neurosis has interfered with some part of the mechanism of micturition. It increases the irritability of the bladder or decreases it; it dulls the perception of the desire for urination or increases it. Deep sleep may make the cerebrum unreceptive to the stimulus, so that it cannot interfere with the automatic emptying of the bladder, or the sleep may not be deep enough for the active inhibition of the sphincters, which occurs in deep sleep; or, if not deep enough, the central nervous system may act promptly in response to the urinary sensations, particularly when these are exaggerated. On the whole, little attention has been paid to the verifying of any such explanation. It is true that great difficulty is encountered because the mechanism of micturition is not fully understood.[11]

The act of micturition can proceed automatically and very completely. Müller-Würzburg [12] cites experiments in which the excised bladder of a rabbit emptied spontaneously when the filling from the ureters reached a certain volume. In the living animal, the cord centers are necessary for prolonged automatic micturition. The possibility of voluntary control of the bladder by means of smooth muscles has raised some difficulty. That such is the case has been demonstrated by Rehfisch [13] and confirmed by Cecil.[14] The animal experiments of Mosso and Pellacani,[15] Elliott,[16] von Zeissl,[17] Langley and Anderson,[18] Langley,[19] Stewart,[20] Rehfisch,[13] Bocci,[21] Abelin,[22] Hanc [23] and others, have contributed much to our understanding of micturition, but such experiments cannot give the desired information about the important relation of urinary sensations to micturition. We know, thanks to Guyon and Müller-Würzburg, that as long as the bladder mucosa is not diseased, it does not give rise to any sensation. With the filling of the bladder, a sensation of distention arises, which gives place at times to a definite desire for urination. These sensations arise in the wall of the bladder.

Micturition, according to Genouville,[24] proceeds thus: First there is a desire for urination, and this is followed

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9. Thiemich, M.: Ueber Enuresis im Kindesalter, Berl. klin. Wchnschr. **38**: 808-811, 1901. Hamburger, F.: Ueber Schlafstörungen im Kindesalter, Monatschr. f. Kinderh. **13**: 23-26, 1916.

10. Stier, E.: Abgrenzung und Begriff des neuropathischen Kindes, Deutsch. med. Wchnschr. **41**: 794-797, 1915. Zappert, J.: Ueber Neurosen im Kindesalter, Arch. f. Kinderh. **73**: 108-126, 1923. Pototzky, C.: Die Kampfertherapie der Enuresis, Deutsch. med. Wchnschr. **48**: 730-731 (June 2) 1922; Die diagnostische und therapeutische Differenzierung der Enuresisfälle, Ztschr. f. Kinderh. **37**: 12, 1924; Ueber nervöse Konstitutions and Reaktionstypen, ibid. **37**: 24 1924. Kläsi, J.: Ueber die psychogenen Ursachen der essentiellen Enuresis nocturna infantum, Ztschr. f. d. ges. Neurol. u. Psychiat. **35**: 371-394, 1916. Karger, P.: Die Hypokolasie, Jahrb. f. Kinderh. **98**: 22-38 (April) 1922; Suggestivbehandlung und heilpädagogischer Bedingungsreflex, Monatschr. f. Kinderh. **25**: 306-313 (March) 1923.

11. The paths by which the bladder sensations travel through the cord, the place where the voluntary control of the bladder mechanism arises, the paths by which these impulses travel, are not known. It has been only recently that Wesson (Wesson, M. B.: Anatomical, Embryological and Physiological Studies of the Trigone and Neck of the Bladder, J. Urol. **4**: 279 [June] 1920) demonstrated that the sphincter is formed by two loops; one, the musculus arcuatus externus orificiae vesicalis from the longitudinal muscle layer of the bladder, and one, the musculus arcuatus internus orificiae vesicalis, formed by fibers coming from the internal muscular layer of the bladder. Furthermore, the trigonal muscle in man is superimposed on the muscles of the wall of the bladder, and arises from the longitudinal fibers of the ureters. This muscle was examined by Macht and found to respond only to sympathetic stimuli in man and animals. Young and Macht (Young, H. H., and Macht, D. I.: A Contribution to the Physiology and Pharmacology of the Trigonum Vesical, J. Pharmacol. & Exper. Therap. **22**: 329 [Dec.] 1923) ascribe to the trigonal muscle the specific function of opening the sphincter of the bladder and inaugurating micturition.

12. Müller-Würzburg, L. R.: Ueber nervose Blasenstörungen im Kriege, München. med. Wchnschr. **65**: 755-759, 1918. Müller-Würzburg, L. R.: Die Blaseninnervation, Deutsch. Arch. f. klin. Med. **128**: 81-106, 1919.

13. Rehfisch, E.: Ueber den Mechanismus des Harnblasenverschlusses und der Harnentleerung, Virchows Arch. f. path. Anat. **150**: 111-151, 1897; Ueber die Innervation der Harnblase, ibid. **161**: 529-568, 1900.

14. Cecil, A. B.: The Mechanism of Urination, J. A. M. A. **65**: 1436-1441 (Oct. 23) 1915.

15. Mosso and Pellacani: Sur les functions de la vessie, Arch. ital. d. biol. **1**: 96-128; 291-324, 1882.

16. Elliott, T. R.: The Innervation of the Bladder and Urethra, J. Physiol. **35**: 367-445, 1907.

17. Von Zeissl, M.: Ueber die Innervation der Blase, Arch. f. d. ges. Physiol. (Pflüger's) **53**: 560-575, 1893.

18. Langley, J. N., and Anderson, H. K.: The Innervation of the Pelvic and Adjoining Viscera, II, The Bladder, J. Physiol. **19**: 71-84, 1896.

19. Langley, J. N.: The Effect of Various Poisons upon the Response to Nervous Stimuli Chiefly in Relation to the Bladder, J. Physiol. **43**: 125-181, 1911-1912.

20. Stewart, C. S.: On the Course of Impulses to and from the Cat's Bladder, Am. J. Physiol. **2**: 182-202, 1898-1899.

21. Bocci, B.: Die Harnblase als Expulsivorgan: Die glatte Muskelfaser, Arch. f. d. ges. Physiol. (Pflüger's) **159**: 119-156, 1914.

22. Abelin, J.: Die physiologishe Tätigkeit der Harnblase und ihre Beeinflussung durch Produkte der inneren Sekretion und andere wirksame Substanzen, Ztschr. f. Biol. **69**: 373-408, 1919.

23. Hanc, A.: Experimentelle Studien über den Reflexmechanismus der Harnblase, Arch. f. d. ges. Physiol. (Pflüger's) **73**: 453-482, 1898.

24. Genouville, F. L.: La contractilité du muscle vésical a l'état normal et a l'état pathologique: Etude clinique et expérimentale, Paris, Asselin and Houzeau, 1894.

by detrusor contraction, which leads to the opening of the sphincter. Guyon believes that the tension of the wall of the bladder leads to contraction, and that this contraction immediately precedes the desire for urination. Schwarz [25] maintains that the tension of the wall leads to desire for urination, that this is followed by contraction of the bladder, and that when this contraction reaches a certain point, the sphincter opens and micturition starts. The voluntary influence can exert itself on this process in various ways. Studying the pressure in the bladder of a patient with enuresis, Adler [26] found a slightly hypertonic detrusor, and Müller, a marked hypertonic. Schwarz speaks of an extraordinary hyperesthesia of the bladder to distention in typical cases of enuresis. Stiefler and Volk [5] call attention to differences in the faradic irritability of the urinary apparatus, while Guyon emphasizes an atony of the sphincter of the bladder. These are about the only more definite findings reported on the mechanism of micturition in cases of enuresis. The observations were made entirely, or largely, on young adults.[27]

The relation of the desire for urination has received special attention at the hands of Weitz [28] and Weitz and Götz.[29] When the bladder is filled with boric acid solution by catheter, and the catheter is connected with a manometer, a certain pressure is registered while the bladder is at rest. This pressure is about 15 cm. water with 100 c.c. of fluid; from 16 to 18 cm. with 200 c.c.; from 19 to 20 cm. with 300 c.c.; from 20 to 21 cm. with 400 c.c., and 22 cm. with 500 c.c. in the normal adult. With the filling of the bladder, a sensation of distention occurs, and almost coincident with the contractions there is a definite desire for urination. The contraction may occur in waves of longer or shorter duration, from seconds to several minutes. The waves may be interrupted by greater or lesser oscillations, of which each again may be associated with a renewed desire for urination. With the fall of pressure, the desire for urination ceases, and the bladder may remain at rest for a shorter or longer period, before another contraction occurs. The feeling of distention may persist with a full bladder. On filling the bladders of patients with enuresis with a certain amount of fluid, Weitz and Götz noted that the contraction waves proceeded as in the norm, but that the desire for urination was wanting. Their experiments were apparently made on young adults; at least, it is not evident from their publications whether such experiments were also made on children.

I have made twenty-five observations on eleven boys and seven girls, of ages from 5 to 15 years. The arrangement was the same as that of Weitz and Götz. The children were instructed to register the desire for urination themselves by means of an electric key. Not all children will obey instructions; some object strenuously; sometimes a preliminary catheterization overcomes the difficulty. Many of the observations extended over considerably more than an hour. The whole procedure was intended as part of the treatment, but without much effect, no matter whether the bladder was finally dilated considerably, or whether silver nitrate solutions were used.

The desire to urinate simultaneously with the contractions was entirely absent twice, and in one of these cases the contractions were low; in spite of a filling with 350 c.c., not even the distention of the bladder was felt. In another case, only one contraction occurred without desire for urination; the others were associated with it. In two other cases, the desire was lacking sometimes at the beginning; later on, all contractions were accompanied by sensations. In one of the cases without desire, the observation was repeated after the lapse of a year, during which time the enuresis had persisted unabated; but at this second observation, the desire was present. In another case in which the enuresis, never severe, had ceased for about three months, a few small contractions occurred without desire. The absence of the desire for urination does not seem to be so common as was expected. When absent, it can return even though the enuresis has not improved, and it may possibly be absent without the existence of enuresis, although this needs confirmation.

By running fluid into the bladder, the sensation of distention in most instances can apparently be well differentiated from the desire for urination, even when the distention becomes disagreeable. The passage of urine by the catheter does not seem to give rise to errors very readily.

In some cases the desire for urination coincided rather closely with the onset of the contraction of the bladder. But in some cases there was a definite latent period of a few seconds between the desire and the onset of the contraction, while in others the desire was registered well after the onset of the contraction. Furthermore, desire in one case was registered with but very small oscillations of the manometer. It is still questionable whether desire occurs without any changes in pressure.

Whether the foregoing results are peculiar to enuresis can be decided only by the observation of a large number of controls, for which, unfortunately, I have had no opportunity. Some of the results may be due to the greater or lesser intensity of the desire, or to an uncertainty of sensation which may perhaps be present in cases of enuresis, although, on the whole, once the child understood the test, there seemed to be little uncertainty. A few times, it happened that the children suddenly took up the key, to get ready for signaling. This was usually followed by signaling the desire and contraction; but occasionally the key was again laid aside, and nothing followed. It must not be forgotten that the registration of sensation is, after all, very subjective, and the results must be interpreted with caution.

In seven of the sixteen observations on boys, and in seven of eight on girls, fluid escaped by the catheter, a great deal from two of the boys and five of the girls. The bladder was capable of retaining only small amounts of fluid in some of these. In spite of this, the bladder pressure at rest can hardly be called excessive, so that the escape of fluid may not be due so much to hypertony of the bladder as to a readier opening of the sphincter perhaps an atony in association with increased irritability. Girls apparently had more difficulty in maintaining closure around the catheter than boys. It may be that there is some difference in the male and female bladder mechanism. Elliott pointed out such differences in animal experiments.

25. Schwarz, O.: Versuch einer Analyse der Miktionsanomalien nach Erkältungen, Wien. klin. Wchnschr. **28**: 1057-1060, 1915; Untersuchungen über die Physiologie und Pathologie der Blasenfunction, Wien. Arch. f. inn. Med. **1**: 455-458, 1920.

26. Adler, A.: Ueber den Druck in der Harnblase, zugleich ein Beitrag zur Function des Blasenmechanismus, u. s. w., Mitt. a. d. Grenzgeb. d. Med. u. Chir. **30**: 487-544, 1918.

27. Müller-Würzberg saw, with the cystoscope, certain abnormalities of the bladder in cases of enuresis among soldiers. The Section on Urology of the Mayo Clinic reported irregularities of the bladder outline in the cystogram of one case. Myelodysplasia, as a frequent and important basis of enuresis in children, has not been acknowledged generally, even though spina bifida occulta does occur. It is doubtful whether it occurs any more frequently with enuresis than without it.

28. Weitz, W.: Ueber die Behandlung der Enuresis, Med. Klin. **15**: 761-764, 1919.

29. Weitz, W., and Götz, O.: Ueber die Pathogenese der Enuresis, Med. Klin. **14**: 729-732, 1918.

I wish to call especial attention to the fact that in several instances the desire for urination was coupled with a drop in bladder pressure. Usually the drop was followed immediately by a contraction, and only once was a distinct transitory fall of pressure not associated with desire, and in this instance, the immediate rise of pressure did not occur. This drop in pressure does not fit any of the theories of micturition.[30]

TREATMENT

Of the various drugs that have been employed in the treatment of enuresis, atropin has perhaps held its place best. In experiments on cats, made by Langley, it diminished the degree of contraction. In some cases, atropin was administered subcutaneously. With one exception, some minutes after the injection and lasting roughly about fifteen minutes, the pulse rate diminished. The children became more quiet. An initial slowing of the pulse after atropin is mentioned by Friedberg,[31] and particularly by Kaufmann and Donath.[32] Sometimes the atropin exercised a certain influence on the bladder by decreasing the intensity of the contractions, and by diminishing their frequency; but this influence was by no means always pronounced. In one case the influence was very striking, yet the frequency of contractions was certainly not diminished; rather, it was increased and there seemed to be a certain rhythm, but the contractions were not as high. With each contraction there was a desire for urination, and it is very doubtful whether this desire was of lesser intensity. If it is recalled that Genouville, and particularly Schwarz, emphasized that micturition does not start before the pressure reaches a certain height, the beneficial result of atropin may be explained in part.

Of the various efforts at classifying cases of enuresis, those of Lippmann [33] and Bossert-Rollett [34] should receive special mention. The latter distinguishes cases in which more urine is passed at night than during the day, and finds that rest in bed during the day is of benefit. Lippmann subjects the children to a water test, particularly those who void early after retiring. Those who, after drinking 300 c.c. of water, void much more urine in a diuretic position than on being up, are placed in this position for some time before retiring. Further work is necessary to establish such a classification, particularly to see whether the test is uniform. In one of our cases it occurred that a child who was up passed more urine at one test, and at the next passed less. In certain cases of enuresis in tuberculous children, great benefit was obtained by the administration of tuberculin.[35] This may be connected perhaps with the effect of these substances on the water excretion.[36] Groupings, like those of Lippmann and Bossert-Rollett, while valuable from a therapeutic point of view, are not so much concerned with the reestablishment of normal mechanisms of micturition as with avoiding its necessity.

I shall not discuss here all the therapeutic measures that have been used with more or less success. The effect of all medical treatment including drugs, hydrotherapeutic measures, electric treatment, and epidural injections, has been ascribed by some authors to the influence of suggestion. In my opinion, this goes entirely too far. While not denying that suggestion may play a part, it surely is evident that atropin, for instance, can exercise a definite influence on the bladder. Even though the influence of such procedures as change of surroundings, of which we had but lately a striking illustration, is probably due to suggestion, too much stress has been laid on the purely suggestive character of the frankly suggestive treatment. It is very difficult always to differentiate sharply suggestion from training. Wake suggestions, applied for a number of times, may readily unite suggestion and training. Indeed, what may be accepted as the prototype of suggestion treatment, treatment by hypnosis, now combines both features. Mosse [37] speaks of exercise treatment in hypnosis. This seems to possess great possibilities, particularly in children approaching the tenth year and older, and I [38] agree with Mosse that the posthypnotic suggestion in children cannot be counted on. Another method that contains suggestive elements is the treatment by means of the pedagogic conditional reflex, as outlined by Karger.[10] Here belongs the treatment with painful faradic stimulation, which should be employed as an immediate consequence of the act to be controlled, with avoidance of the idea of punishment, which may create a feeling of martyrdom. Perhaps the best method is that of Genouville, who fixed up the bed so that wetting closed an electric current, which could ring a bell or administer a shock. I have constructed a convenient portable apparatus for this purpose, which has the advantage that the current, being established on wetting, is immediately shut off again, and serves only to activate the bell or inductorium, or both. This avoids any danger of burning.

Purely educational measures may preferably be emphasized to overcome the indifference of certain children, which usually manifests itself with regard not only to the enuresis, but also to personal appearance and conduct.

The choice of treatment in a given case of enuresis would be greatly aided if it could be classified with reference to the peculiar fault in the mechanism of micturition. To do this, the normal mechanism of micturition must first be further elucidated in its various aspects.

ABSTRACT OF DICUSSION

DR. E. J. HUENEKENS, Minneapolis: I fear that I shall not be able to agree entirely with some of the remarks made by Dr. Amberg. I have had fairly good results with the psychic method of treatment. Chill and mental excitement are often predisposing causes. Under excitement, children who have been almost cured of wetting the bed often will begin the habit again. Frequently there is an influence of heredity. In one case, that of a boy, aged 10, who had wet the bed all his life, and who was cured of the habit, it was found on inquiry that the mother had been a bed wetter all her life, up to the time of, and even after, marriage. This continued up to the time of the birth of her child; after that it stopped. Thus, this was a definite case of heredity. I had had very good results in the milder type of cases. Forty per cent. have been cured by the psychic method, combined with other simple

30. It may possibly be associated with a change of the tension in the wall of the bladder in relation to the entrance of urine into the bladder from the ureters. It may be that we have here an indication of a possible greater influence of the ureters on the mechanism of micturition, although at present, a very indefinite one

31. Friedberg, E.: Die pharmacologische Funktionsprüfung des vegetativen Nervensystems im Kindesalter, Arch. f. Kinderh. **69**: 1-27; 107-132, 1921.

32. Kaufmann, R., and Donath, H.: Ueber inverse Atropinwirkung, Wien. klin. Wchnschr. **26**: 1193-1203, 1913.

33. Lippmann, A.: Zur Entstehung und Behandlung der Enuresis, Deutsch. med. Wchnschr. **47**: 777-778 (July 7) 1921.

34. Bossert-Rollett, Louise: Enuresis und Kreislaufstörungen, Deutsch. med. Wchnschr. **47**: 471-472 (April 28) 1921.

35. Langer, H.: Enuresis und Tuberkulose, Ztschr. f. Kinderh. **33**: 108-109 (July) 1922.

36. Meyer-Bisch, R.: Ueber die Wirkung des Tuberkulins auf den Wasserhaushalt, Deutsch. Arch. f. klin. Med. **134**: 185-207, 1920. Kirch, A.: Oliguria Following Tuberculin Injections, Beitr. z. klin. d. Tuberk. **47**: 429-432, 1921; abstr. Chem. Abstr. **16**: 2360, 1922.

37. Mosse, K.: Die Hypnose im Kindersalter, Monatschr. f. Kinderh **25**: 486-499 (March) 1923.

38. Amberg, Samuel: Some Aspects of Enuresis in Children, M. Clin. N. Am. **7**: 151-162 (July) 1923.

measures. I have ascribed the benefit to the psychic element, rather than to other factors. I have obtained results in two or three days by the psychic method in cases in which the effects of other therapy could be eliminated absolutely. In one case, a 10-year-old boy, who wet the bed at home every night, went to his grandmother to stay. He made the trip on the train and stayed a month with his grandmother, and never wet the bed. The first night he returned home he started the habit again, and he may be still continuing it. This shows that there is considerable effect in environment. In regard to other forms of treatment, I have followed the suggestions of Dr. Grover of Boston, made before this section. These include rest after 4 p. m. The child is allowed to sit and read quietly, but is not allowed on his feet. There is restriction of fluids, and the diet consists of selected foods. The child is put to bed at 7 and awakened at 10 p. m. and 6 a. m. Before going to bed he is given a teaspoonful of gentian compound, purely for the psychic effect, on account of its bitter taste. The child is brought to the office for treatment with the faradic current. If he wets the bed, he is required to report the following day. If he omits wetting the bed for two or three nights, he is allowed to stay away. If he continues to wet the bed, the current is increased to a point at which it causes pain, and if he does not wet the bed it is decreased. By these means I get results in 40 per cent of the milder cases. In the other 60 per cent., work such as Dr. Amberg's should be of value. I cannot agree that the psychic treatment is of no use.

Dr. T. L. Birnberg, St. Paul: I have just finished a study of 100 cases of nocturnal enuresis. Bed wetting is an ordinary occurrence, but of great importance to the patient, who suffers the inconvenience and humiliation of this condition. We must make a clear and clean cut diagnosis before we can begin treatment. We must rule out, first, nocturnal epilepsy, and, secondly, incontinence. Occasionally, also, spina bifida occulta causes enuresis. These three conditions must be ruled out before enuresis, so called, can be treated. I say so called, because we are not certain what it is. Stubborn cases of enuresis in adults have shown evidence of spina bifida occulta. Fifty per cent. of our cases have a neuropathic history, with Chvostek's sign. Forty per cent. of the children have diseased tonsils and adenoids. Psychic treatment is of great value, because most of these children have some neuropathic element. In a large percentage of cases, the mother will say that she also was a bed wetter. There is usually a family history of enuresis. The children all have the same history of playing very vigorously. Being neuropaths, they get greatly fatigued, and when they go to bed they sleep an exhausted sleep, and are "dead to the world." The sphincter is relaxed, and bed wetting occurs. One important feature is a two-hour nap late in the afternoon. They must be kept very quiet late in the afternoon. By lowering the profoundness of the sleep, bed wetting is influenced. I think that the effect of the drugs used is often a matter of psychotherapy. I use muscle control exercises. I tell the mother to teach the child to stop and start the bladder to develop the bladder muscles. I believe that psychic treatment gives the best results. As to position, many of these children have hyperesthesia of the bladder neck. If they are allowed to sleep on the side with the foot of the bed elevated, the urine goes to the fundus and there is not so much pressure on the neck of the bladder. Another point is the question of diet. I think that this is the most important part of the treatment. Feeding should be concentrated in these bed wetters. Noble's work has shown that there is as much water manufactured in the body as the weight of the food ingested. Fifty per cent. is eliminated in the urine and 50 per cent. as perspiration and in the bowels, etc. If the diet is concentrated, the water manufactured is less. It is said that Americans drink volumes of water. They are fond of bathing internally and externally, and many of these children, drinking too much water, must have much water to eliminate. Therefore, it is not surprising that when such children are put on a concentrated diet with the diet particularly concentrated in the afternoon, and the last meal at 5 p. m., to find that bed wetting is immediately relieved.

Dr. John Foote, Washington, D. C.: It is important to have such work as Dr. Amberg's in order to evaluate the varying factors that bear on this very common condition. I think that few of us will disagree with Dr. Huenekens in this estimate of importance of the psychic element. There are many cases which we know must necessarily belong to the neurogenic type of bed wetting. I might mention the type of child who has been properly trained and who has acquired a habit of bladder control during the night, and then from some reason loses this conditional reflex with all the effects of training, and becomes a bed wetter. This often happens after some infection, such as pyelitis or cystitis, or even after a febrile condition in which the urine becomes irritative. In illness the child also receives extra care and petting, which in turn diminishes his short-lived self control. This particular type of recurring bed wetting is, in its etiology, somewhat analogous to a habit spasm. If a child receives an injury of the eye, he may keep up the habit of winking after the injury is cured. Nervous children are prone to develop habit spasms automatically. A very successful therapeutic measure consists in substituting some voluntary muscular movement when the involuntary movement is felt, as touching the cheek when the eye begins to twitch. Sometimes in bed wetting we can substitute a voluntary movement when the child is awake for the involuntary one which occurs during sleep, by the so-called bathroom drill—training the child in voluntary starting and stopping of urination at certain times during the day. This is sometimes effective when combined with other measures. Sir Hector Cameron, in describing the nervous child, speaks of the "negativism" that is so often apparent in such children. This type of child almost always responds negatively to positive suggestion. Take this type of bed wetter to a hospital where every one expects him to perform, and he may stop bed wetting during the time of his stay. This shows another powerful psychogenic factor which may be at work in these cases, and complicates the question of treatment, since it shows that in certain patients too powerful positive suggestion may be productive of harm rather than of benefit.

Dr. Samuel Amberg, Rochester, Minn.: The psychic method has good effect in many cases of enuresis. Dr. Huenekens says that 40 per cent. of his cases responded to psychic treatment. In the literature, 40 or 50 per cent. of cases are reported as reacting favorably to various forms of treatment. What I claim is that even if we have neuropathic and psychopathic patients, and if we can find out in what way the normal processes of micturition are interfered with, that is, where the deviation occurs, we are more likely to get better results in any form of treatment, more than 40 per cent. That it is of psychogenic origin solely, I do not believe, for the reason that in the late war soldiers under exposure alone, and from the stress of trench life, got colds and wet the bed. They were under psychic strain, but that was not the chief reason in all cases. The stop-and-start treatment is good, and sometimes very successful, but it may also be harmful. It belongs to the pedagogic conditional reflex. This treatment would be better if it could be employed at the time the wetting takes place. That is one point I want to stress. As far as concentration of the urine is concerned, I do not see any connection, since in normal conditions the bladder mucosa has no sensation, so I do not see where it can exercise a great influence. It is a different thing when the bladder becomes abnormal, but these cases should be differentiated clinically. As to the relation of spina bifida to myelodysplasia and enuresis, we have seen a large number of cases of spina bifida without enuresis. Perhaps we shall see more cases later on. I have not seen a single case that I could classify under myelodysplasia. The psychogenic advocates should classify their cases more strictly. As far as diet is concerned, it may alter the filling of the reservoir, but it cannot change the normal mechanism of micturition.

Brain and Mind.—Man is the only animal with highly developed association cortical areas. He is the only animal to speak, think and reason, and he does so because he has not fewer than three times as many cortical neurons as any other animal; hence, a study of brain structure is an essential first step in the study of mind and its aberrations.—J. A. Berry: *Brit. M. J.* **1**:710 (April 19) 1924.

PATHOLOGIC BASIS FOR ROENTGEN-RAY TREATMENT OF TONSIL DISEASE *

W. WARNER WATKINS, M.D.
PHOENIX, ARIZ.

Most of the discussions on the subject of the irradiation of tonsils are conspicuous for two things; first, the absence of participation by general practitioners or internists, the people most interested, and second, the almost frantic arguments by laryngologists and surgeons in support of tonsillectomy, these ranging from the naive suggestion that Nature intended the tonsils to be removed because they atrophy later in life, to the statement that the mere presence of streptococci in the tonsillar crypts is sufficient indication for removal, since we never know where these supposedly iniquitous organisms are headed for.

The discussions have not tended to clarify the situation in the eyes of the people most concerned; that is, the general practitioners, internists and pediatricians, into whose hands the welfare of the unfortunate possessor of enlarged tonsils first comes. Further, I believe that the work of serious and unbiased workers in radiation and laryngology justifies the contention that there are types of pathologic changes of the tonsil which are amenable to radiation treatment and which should be so treated by preference; that proof of this is available to any one who really desires to weed it out of the mass of current literature, and that a simple and categorical statement can now be made that will serve as a fairly accurate guide to the general practitioner, internist or pediatrician, in designating whether a given case of tonsil disease is to be irradiated or operated on.

There is much in the literature on this subject that is very confusing. For those who can select with discrimination from the mass of material that has been published, there is a fairly plain path leading toward what will be the final truth in this matter.

The first publication of note in the American literature was the enthusiastic report of Witherbee, in 1920. This was not the first mention of this method, however, for Regaud, in 1913, proposed the treatment of enlarged tonsils by irradiation, but war conditions distracted attention from his suggestion. Following Witherbee's report, many enthusiastic workers began to bring forth reports, and several serious investigators set deliberately to work to check up the published results, and see where the actual truth might lie. At the same time, a concerted cry went up from the laryngologists all over the country against this method, and every possible weak point in the treatment has been seized on and magnified out of all proportion to its importance. Thus, we can find reports that the irradiated tonsils do not remain sterile, an assertion that was soon abandoned by roentgen-ray workers, because they observed it first and found the point of no importance. It has been asserted that the tonsils do not become fibrous as Witherbee first reported, and there has been the equally loud declaration that they become so fibrous that they cannot later be removed by operation. It has been stated that the parotid is injured; that the thyroid is destroyed, with resulting myxedema, and that the pituitary is atrophied and acromegaly produced. One ambitious report has been brought forth in which the investigator submitted the entire bodies of rats to the roentgen ray up to the skin tolerance dose and found that mutations resulted, and on the basis of this the investigator asserted that irradiating the tonsils of children would do so much damage to brain cells that mutations might result in their offspring. This report gave no adequate explanation of the relation between the brain cells and the germinal cells which are, in the well formed genus *Homo,* some distance away. Altogether, the early prophecy of a keen observer among roentgenologists has been abundantly justified, that the irradiation of tonsils would make very slow headway, because it would be strenuously opposed by a very strongly entrenched and well organized specialty of medicine.

On the other hand, roentgenologists have unwisely rushed into this logomachy, adopting the mistaken policy of quoting statistics; therefore, one can find figures showing that tonsillectomy is the chief cause of lung abscess; that 55 per cent. of the tonsillectomies fail to remove the tonsil completely, and, when it is removed, that 50 per cent. of the patients still have chronic throat infections; that tonsillectomy simply allows the bacteria lodging in the throat to drain into the cervical lymph nodes and filter more rapidly down into the apex of the lung; that tonsillectomy does this, or fails to do that. In other words, we have followed the general trend and quoted statistics and case reports ad nauseam, neglecting our final and unanswerable argument—the pathologic basis for our contentions. The general practitioner wants the fundamental reason for any new treatment. A few brief facts will represent this foundation on which we must stand. They may be grouped under: (1) the anatomy and physiology of the tonsil; (2) the demonstrated and biologically controllable effect of the roentgen ray on tonsillar tissue, and (3) the pathologic conditions in which such a known effect, scientifically produced, will remedy the condition present.

FUNCTION OF THE TONSIL

The tonsil is essentially a mass of differentiated lymphatic tissue, surrounded by a fibrous envelop, which holds it in position. The free surface of the tonsil is covered by the mucous membrane epithelium of the throat, this epithelium dipping into the substance of the tonsils in several places, to form the familiar crypts. These crypts are formed just as if one had taken a sharp pointed instrument and punched the mucous membrane into the tonsil; there are from ten to twenty of these infoldings of the epithelium in each tonsil. Within the tonsil, there are two distinct kinds of cells: the main mass of ordinary lymphatic cells, and a number of small islands, called the germinal nodules, in which the cells are more highly differentiated, actively dividing and phagocytic, evidently designed to attack, destroy and digest invading organisms. The network of lymph vessels enters the tonsil from the attached side and the lymph flow is directed toward the free surface, so that lymph and leukocytes are being continually discharged on the free surface of the tonsil and into the crypts. The crypts are lined with epithelium similar to that on the free surface, except that it is thicker in the crypts; this epithelium is everywhere seen to be invaded by leukocytes and lymphatic cells, with germinal nodules protruding into the epithelium in a number of places.

The tonsils guard the gateway to the respiratory tract and furnish the first protection against bacterial invasion.

The direction of the lymph flow in the tonsil and the discharge of this protective lymph with phagocytic

* Read before the meeting on radiology in the Section on Miscellaneous Topics at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

white cells on the surface of the tonsil is the first defensive measure of the tonsil. Whether the leukocytes are formed in the tonsil by the germinal nodules, or brought into the tonsil by the lymph, is not a matter of prime importance; in either event, they are poured into the crypts and on the free surface in large numbers, forming the salivary corpuscles of the mouth and throat secretions.

The crypts, lined with epithelium, are bacterial filters, the membrane being thickened in the crypts and designed to hold back bacteria. Within these crypts, the lymph and leukocytes supplied from within the tonsil kill off the bacteria that invade these openings, the débris being washed to the surface. If the destruction becomes rapid, or retention within the crypts abnormal, the crypts narrow and fill up with the familiar plugs. When bacteria penetrate the epithelium, they are met by the phagocytes, which are one of the characteristics of tonsillar epithelium.

The third function of disintegration, destruction and absorption of bacteria within the tonsil is a function that has been established within recent years. The histologic and anatomic structure of the tonsil, and all the research work of the last few years, point directly to this function as an important one, if not the paramount one, of the tonsil and other lymphatic tissue of the throat. Whether this disintegration takes place within the crypts, or whether it is performed by the germinal nodules when bacteria invade the stroma of the tonsil, the result is the same.

Having in mind the anatomy and the established physiology of the tonsil, are we not forced to conclude that the tonsil is an important functional organ, which should be conserved, if possible, through the period when its functional activity is needed, unless it becomes so destroyed by disease that it is no longer possible of restoration to usefulness? Is the effect of radiation on the tonsil such that it can accomplish this conservation, without sacrificing the tonsil entirely?

ACTION OF ROENTGEN RAY ON TISSUE

Biologists for years centered their researches in the roentgen ray on the action on the simplest types of cells, those which are least differentiated, so that we know today, more accurately than we know much which we daily apply, what is the effect of roentgen rays on the lymphoid cells and what will be the results when a tonsil, composed of lymphoid cells, is irradiated. The effect of roentgen rays on lymphoid cells is as uniform as that of arsphenamin on syphilitic lesions, and can be applied as accurately and with less danger of complications or effects due to idiosyncrasies. Exactly the same principles apply in treating tonsillar disease as are used in the treatment of the spleen in leukemia, in which the dose is graduated so accurately that there is a gradual dissipation of the lymphatic cells of the spleen and a gradual formation of fibrous tissue, except that in the tonsillar disease there is not the malignant reformation of these cells. Irradiation of the tonsil can be so graduated by the intelligent radiologist as to effect a partial destruction or dispersion of the abnormal mass of lymphoid cells, or a complete destruction, with fibrous tissue formation. Of course, the cervical lymph glands in the path of the ray and the lymphatic tissue of the pharynx are affected also, but this is usually desirable.

The arguments about injury to the thyroid or the pituitary, or permanent injury to the skin are as foolish as would be the argument that surgical removal of the tonsils should never be undertaken because lung abscess sometimes results, or the pharyngeal pillars are injured.

The question to be answered by the clinician is, In what class of cases is it desirable to use a conservative method, which will cause the tonsil to return to its normal size and function, or to a condition of atrophy but with a preservation of the major portion of its functional efficiency? In this connection, I might mention that the most significant fact in the investigations by Waters and his associates in Baltimore was the observation of the pathologist that, in the irradiated tonsils, there was a marked atrophy of the lymphoid elements, but the germinal nodules of the tonsils remained unaffected; in brief, the radiation cleared the battlefield of all untrained noncombatants and all the dead and dying, leaving the highly trained army and the munition factories undisturbed to carry on the war. Before reviewing briefly the types of pathologic conditions calling for treatment, I will consider what is to be regarded as a normal tonsil. This cannot be discussed in detail, but I simply wish to record the belief that this must be judged from clinical appearances and not by bacteriologic investigations. If there has been one thing established by all the investigations on the tonsil, it is that the bacteriologic findings and the clinical condition of the tonsil have no definite relation, and the results of treatment by radiation or by surgical methods are not to be judged by bacteriologic findings. One can take cultures that will yield *Streptococcus hemolyticus* from all tonsils, if one keeps trying. Their presence in the crypts, so far from meaning, per se, that the tonsil is dangerous and requires radical treatment, indicates that the tonsil is performing its function and holding back these organisms, else they would be inside the tonsil and beyond the reach of the aspirator. Cultures furnish only confirmatory evidence of clinical symptoms.

PATHOLOGY OF THE TONSIL

There may be, in the tonsil: (1) hypertrophy, (2) acute infection, (3) chronic infection, and (4) malignancy.

Malignancy will not be considered here, since there is no argument over the indications for irradiation in that condition.

Hypertrophy of the tonsil, or a simple increase in bulk, if it calls for any treatment because of mechanical factors, is better irradiated than subjected to tonsillectomy; irradiation can be so graduated as to bring about a reduction to normal size. The very presence of hypertrophy, without actual infection, indicates some degree of status lymphaticus, of which the wise surgeon fights shy.

Acute tonsillitis may be either follicular or interstitial. In the pure follicular type, the infection is confined to the crypts and mucous membrane, without invasion of the stroma, and, therefore, without swelling of the tonsil. In the pure interstitial type, there is invasion of the lymphatic stroma and massing of the lymphoid cells within the tonsil, with consequent swelling of the organ. As a matter of fact, the infection of purely one type or the other is not seen, and we have both infected crypts and a swollen tonsil. The acute tonsillitis either promptly subsides or passes into the chronic stage.

In the chronic tonsillitis, pure types may be encountered. The chronic follicular tonsillitis, with infection of the crypts, is accompanied by infiltration of the epithelium by round cells, multiplication of the epithelial layers and exudation into the crypts or on the surface of the tonsil. The crypts may gradually fill up with

débris, or may become constricted by swelling of the mucous membrane lining them, or by formation of cheesy plugs.

Chronic interstitial tonsillitis may be an infection of the stroma, producing reaction in the lymphoid elements, and swelling of the tonsil; this is the hyperplastic type. On the other hand, when the infection is gradual, and fibrosis can keep pace with the inflammatory destruction of the tonsillar stroma, we have the fibrous type. In the hyperplastic type, the increase in mass crowds on the germinal nodules, narrows or obliterates the crypts, and hampers drainage of toxic products from the interior of the tonsil. Destruction and lack of drainage may cause abscess formation within the tonsil or around it.

With due regard for exceptions, I would say that the following types of pathologic changes are amenable to irradiation and should be so treated by preference:

(*a*) Simple hypertrophy, whether accompanied by adenoids or not, because these enlarged tissues can be made to shrink back to a normal or atrophic condition so readily and gradually that there is no danger and no discomfort to the patients.

(*b*) Chronic interstitial tonsillitis of the hyperplastic type can be made to subside under irradiation so quickly and effectively that, in the absence of grave emergencies, there is no comparison between the irradiation and tonsillectomy. The crowding mass of lymphoid cells are quickly dispersed, the mass of the tonsil rapidly shrinks, the cryts open up and become shallower, and the infection subsides. If it is then desired to carry the treatment further and cause a permanent atrophy of the tonsil, with fibrosis of its lymph stroma, this can be accomplished.

(*c*) In the chronic fibrous interstitial tonsillitis, and in the chronic follicular tonsillitis with little or no hyperplasia, the conditions are not so remediable, and the results will depend entirely on how much lymphoid tissue there is present to be shrunk by irradiation, and how effectively the crypts can be obliterated by such shrinkage. It is my opinion that, as a rule, such tonsils, if dangerous to the general health, had better be removed.

(*d*) When there is evidence of retained pus within the tonsil, or internal to it, tonsillectomy is the preferable treatment.

In the absence of emergency factors, the question of irradiation or surgery could almost be decided on the basis of presence or absence of enlargement of the tonsil, because if there is enlargement, this will mean hypertrophy or hyperplastic inflammation for all practical purposes. Unless some other type of treatment is called for by the clinical condition of the patient, then, a hypertrophy or hyperplastic pathologic type, in the absence of suppuration, can best be handled by irradiation.

CONCLUSIONS

1. The tonsil is an important organ and should be conserved when possible, through the adolescent period.

2. Irradiation has a known and well established effect on the essential tonsillar tissue.

3. Irradiation of the tonsil can be applied effectively, accurately and with safety to the tonsil.

4. When the pathologic changes are of the hyperplastic type, in which atrophy of the tonsil and reestablishment of drainage is the consummation to be desired, irradiation is indicated.

5. When irremediable damage has been done to the tonsil, or when atrophy and reestablishment of drainage is apparently not to be expected, irradiation is not the treatment indicated, but surgery, if clinical conditions call for radical treatment.

ABSTRACT OF DISCUSSION

DR. E. S. BLAINE, Chicago: My experience has been the same as Dr. Watkins'. This is logical, scientific, sensible. Why there is so much opposition to it is more than I can understand. The cases we see occur in members of physicians' families. They prefer to operate in their own cases; but when their children have hypertrophied tonsils they bring them to us and we have shown a very satisfactory percentage of improvement. Dr. Watkins should be commended for his detail. It is not empiric, but is founded on good medicine, and therefore I give my support to all that he has said.

DR. SANFORD WITHERS, Denver: It is unfortunate that this, and other papers of the past, relating to the same subject, could not have been given before the Section on Laryngology, as this would do much toward eliminating the opposition now fostered against radiation methods. Dr. Watkins may be a little too conservative in the statistics given. It is my impression that 75 per cent. of the tonsillectomies now being done can be eliminated by proper radiation methods, with as good or better results accruing, for the reason that no tonsillectomy removes nearly all of the lymphoid tissue of the throat. On the contrary, properly applied radiation should cause a retrogression of the lymphoid elements of the tongue, fauces and pharynx, as well as enlarged, outlying pyogenic or tuberculous glands.

DR. H. J. ULLMANN, Santa Barbara, Calif.: I wish to emphasize Dr. Watkins' excellent argument that bacteriologic control is not of great moment. Dr. Nuzum and I attempted to correlate the bacteriologic findings and the clinical results in a series of cases. Thirty-five per cent. of those treated became negative to hemolytic streptococci (they all had them at the start) and remained free for at least six months following the last treatment, and in several instances a month elapsed before the disappearance of the cocci. All of these patients were found free at six months, but at the same time no relation between the clinical effects and the bacterial findings was observed. One patient who had had two series of treatments was very much pleased with the clinical results. Whenever she had caught cold, which was frequently, she had had tonsillitis. Following irradiation, she had head colds but no tonsillitis. The flora was the same, and we followed her through for six months. When you go back to your work, notice how many patients are sent who have had a tonsillectomy and are sent in for radiation treatment because they still have sore throat, and there is nothing left to cut out. One gets excellent results in these cases. The question was raised at the time we read our paper that, perhaps, there was a normal fluctuation in the bacteria of the tonsils; that the findings following irradiation might be found without irradiation. Since then, Dr. Nuzum has examined a large number and found that those harboring streptocci had them at all times over a period of months; therefore our original findings are shown to be the effect of irradiation and not a normal fluctuation.

DR. I. S. TROSTLER, Chicago: I agree with everything Dr. Watkins and Dr. Blaine said. At the time Dr. Blaine mentioned, I opened the discussion and reported about thirty cases of tonsils treated, a majority of which were in the families of physicians, and about one third of which were in the families of laryngologists. Within a week thereafter two laryngologists sent me two of their own children for treatment of their tonsils by means of the roentgen rays. I think that is very significant.

DR. EDWARD MANSUR, Jefferson City, Mo.: There is one matter that has not been brought up that is quite important, and that is the rheumatic infection. How many of you have noticed cases in which chronically infected tonsils, with an active infection have been removed and there has immediately

been set up an acute highly infectious rheumatic infection. These infections are sometimes serious. The worst cases one sees sometimes develop after the removal of tonsils. I have seen quite a good many severe chronic tonsillary infections, in which the tonsils have been removed subsequent to irradiation, and in these cases there has not been a flare-up of chronic focal infection.

DR. W. F. MANGES, Philadelphia: I am convinced of the efficacy of radiation treatment in tonsil infection; and recommend it strongly as a preliminary measure to operative precedure. I am treating a number of physicians and surgeons now. One of these has had a number of surgical calamities from infection, and he was found to have a particularly bad strain of hemolytic streptococcus in his tonsils. It was surprising to him to find that after two series of treatments to his tonsils with comparatively small doses of roentgen rays he was much improved. He was surprised when the pathologist told him that the hemolytic streptococcus had largely disappeared from his tonsils. There was no visible effect on the tonsil tissue. He had not been complaining of a sore throat and, so a great many patients are harboring a most vicious variety of bacteria without suffering from a definite inflammatory condition. If one operates and lets that patient aspirate some of the material of the tonsil or tiny fragments of the secretion that must be squeezed out at the time of the operation, too many, of them develop lung abscesses. The large percentage of cases of lung abscesses, almost all that I see, and I see many, are posttonsillectomy abscesses, and those abscesses come on sometimes not immediately, not within a day or two after tonsil operation, but within a week or so, and for that reason many of them are not credited to the proper source. Patients frequently have their tonsils removed in the morning, and leave the hospital in the afternoon. This is especially true in big clinics and large hospitals, where it is the custom to get rid of tonsillectomy cases quickly, and for that reason the pulmonary abscesses that have been recognized have not been credited to the proper source. Let us encourage radiation treatment of infected tonsils, not to take the patient from the laryngologist, as has been suggested, because the cases of real enlargement of the tonsils will need to be referred to the surgeon for operation, but let us try to convince the general surgeon as well as the laryngologic surgeon that we can do something to make matters safer for them as well as for the patient.

DR. W. P. WHITTINGTON, Asheville, N. C.: After this question was brought out by Murphy and Willoughby, I began the treatment of enlarged tonsils with their technic. My attention was called to one patient for the purpose of incising a peritonsillar abscess, which I did, and when he recovered from that condition I advised roentgen-ray treatment. During the summer I gave him six treatments and early in the fall two more, making eight altogether. He went through that winter without a recurrence of the trouble, and two winters since then. This is positive evidence in favor of roentgen-ray treatment.

DR. F. V. MARTIN, Michigan City, Ind.: I want to concur in all that Dr. Watkins said in his paper, but wish to call attention to what I call a by-effect of the treatment of the tonsils. One of my associates had a great deal of throat trouble for years. He was operated on twice. He had a valvular heart lesion and a blood pressure that for a number of years was around 200. There was a little of the tonsil left, and he had occasional attacks of sore throat at the tonsillar area. I persuaded him to allow me to treat the tonsillar area, and when he got off the table I felt his pulse, and some way it did not register right. There was a markedly lower pulse pressure than he had had before. In the night I got to thinking about it, and the next morning I insisted on taking his blood pressure and was surprised to find it at 140, and it remained at 140 for three or four weeks. Then it rose gradually. When it reached 170, I treated him again and his blood pressure came down again and for the past year, after three treatments, it has remained at 150 or below, a perfectly normal rate for his age. I now have a record of ten cases of essential high blood pressure which I have treated with marked improvement in more than 80 per cent.

DR. W. W. WATKINS, Phoenix, Ariz.: This paper was presented for the purpose of emphasizing what Dr. Horsley has told us he would like to see come from this section—a move back to fundamental pathology and physiology in our work. Of course, in our field, we must necessarily try out many things and many methods; but when we do serious work on patients referred to us by other specialists, we must have a fundamental pathologic basis for the work we perform. We think we have this in tonsil disease, and the conservative statements made in the paper were deliberate, that we might have the approval of the laryngologists.

A PRACTICAL DANGER IN THE USE OF INSULIN BY THE PATIENT AT HOME*

ROBERT S. BERGHOFF, M.D.
Assistant Professor of Medicine, Loyola University School of Medicine
CHICAGO

When insulin was first introduced as a therapeutic measure in the management of diabetes mellitus, it was deemed advisable that its administration be begun with the patient under hospital supervision. That this was and still is a wise and just precaution, should evoke no controversy. We are dealing with a powerful agent, and employing it to combat a condition that varies widely with each individual, thereby precluding the possibility of anything like a fixed dosage. With each case a law unto itself, it is essential that, through careful and painstaking analysis, the degree and severity of the disease be determined, and, by a study of its reaction and behavior to an adjusted diet and insulin, a safe dosage of the latter arrived at. This was found to be practical only in a well instituted hospital. Particularly was this so if, in addition, it was anticipated that insulin therapy might be prolonged indefinitely in individual cases, thereby necessitating its administration by the patient himself. For it was essential that he be thoroughly grounded in its use, be warned of its dangers and be instructed both in dietary estimation, and in the more simple but adequate tests to check from day to day his urine sugar.

It was quite natural that, at the outset, we experienced a certain degree of temerity in entrusting the patient with what unquestionably is a considerable responsibility. It called for real optimism and no small amount of faith in human nature. We were forced to depend on the intelligence and cooperation of the patient, not only to adhere minutely to a prescribed dosage of insulin and administer it aseptically, but also to gage his diet accordingly, and to check the effect of the two by daily urine sugar estimation.

As time went on, our faith in human nature was amply rewarded by results. We were agreeably surprised to find that even persons of mediocre intelligence and, in some instances, of low mental standard, seemed to appreciate the seriousness of the work entrusted to them, and cooperated faithfully and efficiently. It was decidedly an exception to encounter a serious dietary indiscretion, an overdose of insulin or neglect in the daily routine sugar analysis. Relieved from tension and freed from misgivings, we were about to assume an air of complacence, when we were confronted with what we believe a new source of worry.

In the past, we have felt safe in assuring our patients who possess urine sugar in appreciable amount that its

* From the Department of Medicine, Loyola University School of Medicine and Mercy Hospital.

entire absence on a given diet and set insulin dosage bespeaks a corresponding satisfactory blood sugar level, and calls for at least a temporary cessation of insulin therapy. In fact, we had almost accredited insulin with a gradual resumption of carbohydrate tolerance. However, at first sporadically, and of late, regularly, we have been impressed with the undeniable fact that after a more or less continued course of insulin the blood sugar threshold rises appreciably. This fact is of material importance, and opens the way to all sorts of conjectures.

In the first place, this rise of the blood sugar threshold is of significant importance to the patient, robbing him of his only check, and lulling him into a sense of false security. If, for example, before the initial use of insulin, a patient's blood sugar threshold is determined at from 0.120 to 0.150, at which point sugar appears in the urine, it has been our common observation that the use of insulin soon raises those figures materially, in some instances more than 0.50 point.[1]

REPORT OF CASES

CASE 1.—O., a man, aged 35, who had had diabetes for three years, in September, 1923, developed an acute exacerbation and came under our observation. At that time, the blood sugar[2] was estimated at 185 mg. per hundred cubic centimeters of blood, and the urine sugar approximately 5 per cent. (50 gm.). On dietary management plus insulin therapy, the blood sugar was gradually lowered. It was found that with a blood sugar of 126, the urine was sugar-free, and, with an elevation to 140, urine sugar reappeared. This patient left the hospital after two weeks on a suitable diet plus a daily insulin dosage of 12 units. The patient reported, ten days later, that the urine for the last three days had shown no sugar, and that therefore he had discontinued the use of insulin. It was not practical to obtain the blood sugar, so he was given an augmented diet and instructed to be guided by the daily urinalysis as to the necessity of insulin. He returned, in two weeks, with the statement that he had used no insulin as the urine had been entirely free from sugar during that period. A blood sugar estimation made at that time showed 186 mg. per hundred cubic centimeters of blood, and the urine sugar free, with Benedict's and Fehling's tests.

CASE 2.—Mrs. D., aged 52, had had diabetes for four years, when an acute exacerbation brought her under observation in September, 1923. At that time, the blood sugar was estimated at 400 mg. per hundred cubic centimeters of blood and 8 per cent. of urine sugar. On a dietary regimen plus insulin, the blood sugar was gradually lowered, and the urine sugar cleared. The blood sugar threshold was found to be between 134 and 148. A rise beyond 148 occasioned the presence of urine sugar. A fall below 130 cleared the urine. She was sent home on a regulated diet and a daily insulin dosage of 30 units. For the first two weeks, the patient showed urine sugar in amounts varying from 0.5 to 2 per cent.; thereafter the urine was consistently sugar free, and the insulin was discontinued. After four weeks, a blood sugar estimation revealed 200 mg. per hundred cubic centimeters, and no urine sugar.

CASE 3.—Mrs. T., who had had diabetes for six years, with four acute exacerbations, for the first three of which she underwent a "cure" at a spa, came under our observation in October, 1923. At that time, the blood sugar proved 196 mg. per hundred cubic centimeters of blood, and the urine 9 per cent. On dietary regulation plus insulin therapy, the blood sugar was brought to normal and the urine cleared. The blood sugar threshold vacillated between 138 and 150. A rise above 150 precipitated urine sugar; a fall below 138 cleared it. She was sent home on a daily insulin dosage of 10 units. For three weeks, the urine showed sugar in amounts varying from 1 to 3 per cent. Thereafter, the urine was continually sugar free and, in consequence, insulin was discontinued. Three weeks later, the blood sugar was estimated at 180 mg. per hundred cubic centimeters, and the urine was found sugar free.

CASE 4.—O., a man, had had acute diabetes for six months when he came under our observation in October, 1923. The blood sugar was estimated at 220 mg. per hundred cubic centimeters of blood, and the urine sugar at 7 per cent. The blood sugar threshold was determined to be between 130 and 150. A rise above 150 precipitated urine sugar. A fall below 130 cleared the specimen. He was sent home on a daily insulin dosage of 7 units. After one week, the urine remained sugar free. Profiting by the previous three cases, we secured a blood sugar estimation weekly. It was found that the blood sugar threshold had risen to 190 mg. per hundred cubic centimeters of blood. A rise of blood sugar beyond that point (195 mg.) precipitated urine sugar.

CASE 5.—R. R., a man, aged 42, had had diabetes for two years when an acute exacerbation brought him under our observation in March, 1924. The blood sugar at that time was estimated at 215 mg. per hundred cubic centimeters, and the urine sugar at approximately 6 per cent. The blood sugar threshold was found to vary between 120 and 146. A rise of blood sugar above this maximum precipitated urine sugar. A fall below the minimum dispersed it. He was sent home on a supporting diet that called for 12 units of insulin daily. Three weeks later, the urine was consistently sugar free, and insulin was automatically discontinued. The blood sugar estimation revealed a marked rise, however, to 180 mg. per hundred cubic centimeters of blood.

CASE 6.—E., a man, aged 68, had had a coexisting nephritis and diabetes for several years before he came under our observation in February, 1924. At that time, the blood sugar was estimated at 215 mg. per hundred cubic centimeters of blood, and the urine sugar at 8.5 per cent. On a diet plus insulin, the blood sugar was brought to normal, and the urine cleared. The blood sugar threshold held consistently at between 144 and 156 mg. Any rise above that figure precipitated urine sugar. He was sent home on a daily insulin dosage of 20 units. For four weeks, the urine showed sugar varying in amounts from 0.6 to 2.4 per cent. Thereafter, it became clear, and insulin was discontinued. The blood sugar, however, had mounted to 196 without spilling over.

CONCLUSION

In addition to the cases cited, the same unsatisfactory and startling findings are being encountered in cases under observation at present. The practical significance is obvious. If patients are to be entrusted with the home use of insulin, a rough check on their status is essential. A daily blood sugar test is not practical. In the past, we relied on a daily urine sugar estimation to afford that information. In view of the recent gross discrepancies, however, between blood and urine sugar levels, that would seem unsatisfactory.

It is realized, of course, that the few cases cited constitute no criterion, and they are presented merely as an original observation, and this paper as a preliminary report. Further work will be done in verification, and published later.

122 South Michigan Avenue.

1. Urinalyses in each case were made on a portion of a thoroughly mixed and properly collected twenty-four hour specimen.
2. Blood sugar estimations were uniformly made on specimens drawn approximately two hours before meals.

Scientific Method in Medical Curriculum.—The scientific method should be made the guiding principle throughout the medical curriculum. In all medical instruction, it should be kept constantly in mind. Every teacher should be an active investigator. Moreover, I firmly believe that every medical student, at some time during his course, should have the opportunity to undertake on his own account a modest bit of original research in the more formal sense. Although the resultant contribution be slight, the experience would be invaluable in giving him a better grasp of the scientific method, its uses and its limitations.—C. M. Jackson: *Science* **60**:232 (Sept. 12) 1924.

ACUTE YELLOW ATROPHY OF THE LIVER FOLLOWING NEO-ARSPHENAMIN INJECTIONS

REPORT OF CASE

WILLIAM H. GORDON, M.D.
DETROIT
AND
MILTON S. FELDMAN, M.D.
ANN ARBOR, MICH.

The fatalities following the administration of the arsenical preparations, particularly arsphenamin and neo-arsphenamin, in the treatment of syphilis have been attributed to various factors, the two most probable and important being the toxicity of the drug and error in the technic of administration. To these may be added two less frequent and important causes: the anaphylactoid reaction, in which death is rather rare, and the presence of disease of vital organs made worse by arsenical medication, with the ultimate result of death to the patient.

In the majority of lethal cases as well as in experimental work in the laboratories,[1] by far the greatest destruction, as ascertained by histopathologic study, appeared to be centered in the kidney and liver. However, note is made of the fact that in Europe meningeal involvement appears to be more common and severe, and again not altogether lacking in this country. Banton[2] reports four fatal cases under his observation in this country in which the cerebrospinal axis was most severely involved. There are many who support the idea that the cranial involvement is due either to an overdose of the drug or to too frequent injections.

Jaundice was for the great part the sign of liver involvement, and the time of its appearance in relation to the number of arsenical injections permitted a classification with which most of us are familiar. In the majority of cases the jaundice is transient, but in a few cases the patients die without relief from icterus. In our case the patient at first had a transient jaundice, which returned later and lasted until the time of her death. The question of the possible rôle played by the mercurial administration during the course of the treatment as a factor in the production of acute yellow atrophy was seriously considered.

REPORT OF CASE

History.—A white woman, aged 29, housewife, in February, 1923, complained of a coldsore on her lower lip that would not heal. There was no history of hepatic disease or of any operations. At times, when in need of money, she was a prostitute. In the early part of February she noted a small lesion on the lower lip slightly more to the right than to the left. This gradually enlarged, and resembled a coldsore. It persisted in spite of treatment.

Except for the lesion on the lower lip, nothing of any importance could be found. Special attention to neurologic findings of syphilis likewise revealed nothing. The lesion was markedly altered in appearance as a result of chemical cauterization; however, it was suggestive of herpes labialis simplex because of a few small vesicles present; but, because of its persistence and yet oddity of appearance, no definite diagnosis was made. The question of late secondary syphilis was considered, and its possibility more augmented by its persistence and more assured when the routine Wassermann showed ++++. The lesion itself could not be said to have the punched out appearance of gumma, but we cannot comment on this because of alteration due to medicinal applications. The patient was advised to have her syphilis treated, and on March 8 received an intravenous injection of 0.15 gm. of neo-arsphenamin. Because of the social aspect of the case, we felt that drastic treatment was necessary. The treatment described below has been used successfully by us in cases in which drastic measures were necessary, with excellent results in many cases.

From March 12 to July 5, she received 13.2 gm. of neo-arsphenamin, together with sixty mercury inunctions, each 5 gm.

July 5, the Wassermann reaction was ++. The patient was advised to return in two months.

In September, sulpharsphenamin, 0.6 gm., was given.

October 1, neo-arsphenamin, 0.9 gm., was given.

October 16, neo-arsphenamin, 0.9 gm., was given, and jaundice developed. Treatment was stopped. The jaundice lasted one week and the patient recovered. A week following her recovery she suddenly became jaundiced. No treatment was given during the period. The jaundice became more marked, and, November 12, she became delirious and remained so till she died. During the last few days prior to her death she had incontinence of feces and urine.

At a second physical examination, November 12, the patient lay doubled up in bed with a high degree of jaundice. She refused to speak, her mental state appearing greatly impaired. Her head, ears and nose were negative. The eyes reacted to light and in accommodation, and the extra-ocular movements were normal. There was no nystagmus or strabismus. The fundus appeared slightly injected. The mouth showed sordes and the breath was foul. The tongue was coated brown. The mucous membrane appeared slightly hyperpigmented. The chest was normal. The heart margin was 9 cm. from the midsternal line. The aortic second sound was greater than the pulmonic second sound. A blowing murmur, systolic in time, could be heard over the apex.

The abdomen was soft. The liver dulness began in the sixth interspace and was well under the rib margin. Some slight tenderness was suggested at times. The spleen was not palpated. No ascites could be elicited by percussion. The pelvis was normal. The reflexes were slightly hyperactive. The laboratory report showed: blood sugar, 0.108; Wassermann reaction, ++++; spinal fluid, normal; urine normal except for a large amount of bile pigments.

On the afternoon of November 15, the patient died.

Necropsy.—The body was well developed and well nourished. The skin was deeply jaundiced. The chest cavities contained no fluid. The lungs seemed to be normal and air-containing. The heart was entirely adherent to the pericardium and was removed with considerable difficulty, being possessed of a considerable amount of old fibrous tissue. It did not seem to be exceptionally large. The liver was shrunken and the capsule was in thin wrinkles all over, evidence of recent shrinkage. It was dull gray, with an occasional patch of red. On cut surface it showed the typical picture of acute yellow atrophy, with small, round, yellow spots averaging about 0.5 cm. in diameter. It weighed 750 gm. The spleen was normal in size and shape. The pancreas was normal. The kidneys were large; the capsule was adherent and the surface somewhat granular. The cut surface showed a typical picture of an extensive parenchymatous nephritis. The gastro-intestinal tract was normal.

The pathologic diagnosis was: acute yellow atrophy of the liver; adherent pericarditis, and acute parenchymatous nephritis.

SUMMARY

Acute yellow atrophy of the liver is not altogether an uncommon condition following arsphenamin and neo-arsphenamin injection. Schamberg makes note of the fact that jaundice or acute yellow atrophy of the liver has rarely been exhibited in his clinic, and this is accounted for by careful administration of neo-arsphenamin in large doses without the simultaneous treatment with mercury. He states that mercury, although nephrotoxic, is responsible for arsenical

1. Scott and Pearson: A Preliminary Report on Syphilis and Arsenical Jaundice, Am. J. Syph. 3: 628 (Oct.) 1919.
2. Blanton, W. B.: Four Fatal Cases Following Arsphenamine, Am. J. Syph. 3: 648 (Oct.) 1919.

intoxication because of some injurious affect on the liver. In view of the fact that we had used large doses of mercury and neo-arsphenamin simultaneously, we felt that it may have been responsible for the death of the patient. In looking over records of a series of cases in which similarly drastic treatment was instituted and in which we have had no similar experiences of acute yellow atrophy, it again brought to our minds the question of preexisting pathologic changes in the liver made worse by combined treatment of mercury and arsenic in large doses.

We are now beginning to make studies of liver function tests before instituting any form of drastic treatment, which we hope to report on at some future date.

HEMATURIA AS A SYMPTOM OF SYSTEMIC DISEASE*

EDWIN A. LOCKE, M.D.
AND
GEORGE R. MINOT, M.D.
BOSTON

Hematuria, or the presence of red blood corpuscles in the urine, is a symptom of very frequent occurrence, and its etiology is manifold. In this paper, the term hematuria is used in the broad sense, as including not only gross hemorrhage but also the presence of red blood corpuscles in the urine demonstrated microscopically.

Certainly, with very rare exceptions, the presence of blood in the urine is always a symptom of some lesion in the genito-urinary tract. When hematuria is due to systemic disease that does not primarily affect the urinary organs, the principle also holds true, since there is usually some anatomic change to cause the bleeding. Whatever the nature of the disease, the basic causes of the blood loss are the direct result of congestion, infection or trauma, including that due to the development of abnormal tissue, or actual changes in the blood that alter factors associated with pathologic hemorrhage. One or several of these causes may be present in a given case.

Considerable prominence has been given to the so-called "essential" or "symptomless" hematuria, which was believed by many of the older writers to exist independent of any local lesions in the urinary passages, bladder or kidneys. The absence of evidence of any primary disease led to the assumption of the independent or idiopathic character of such cases. During recent years, careful anatomic and cystoscopic studies by many investigators have tended more and more to indicate that the occurrence of hemorrhage from the urinary tract always results from some detectable lesion, though it may be obscure and local. The consensus of opinion seems to be that, in all but a very small percentage of obscure cases of hematuria, careful study will reveal evidence of organic disease, usually of the urinary tract, and that the designation "essential hematuria" should be abolished, as having no significance other than the observer's inability to demonstrate the cause.

Although patients with hematuria dependent on diseases other than those of the urogenital tract form but a small minority of all, they are, nevertheless, important, and will explain at least some of the cases heretofore called "essential hematuria." The systemic conditions in which hematuria may arise comprise a relatively large number of morbid states, which are, for purposes of discussion in this paper, grouped thus: (1) diseases and conditions of the hematopoietic system; (2) diseases and conditions resembling those associated with pathologic conditions of the blood; (3) infections; (4) conditions causing chronic passive congestion of the kidneys; (5) toxic agents, and (6) miscellaneous conditions.

DISEASES AND CONDITIONS OF THE HEMATOPOIETIC SYSTEM

Diseases of the blood or of the hematopoietic system, and diseases resembling those with defects of hematopoietic functions, form a small but important group in which blood may appear in the urine. A thorough understanding of these conditions occasionally helps to explain an otherwise puzzling case of hematuria.

The two most important alterations of the blood leading to pathologic hemorrhage, such as hematuria, are a prolongation of the clotting time and a marked decrease in the number of blood platelets.

Prolongation of the Coagulation Time of the Blood.—Hemophilia.—This condition presents as one of its most characteristic features a marked lengthening of the coagulation time of the blood, which leads to excessive bleeding following an injury insufficient to cause loss of blood in a normal individual. The injury may be only trifling or not even evident. Hemophilia is almost strictly a disease of males inherited through the mother, but is said to occur in a female provided the mother is a hemophilic conductor, and the father has hemophilia. Hematuria is by no means a rare manifestation of hemophilia. Barney [1] found a record of hematuria in 16 per cent. of forty-two cases treated in the Massachusetts General Hospital. In our series of twenty undoubted cases over 15 years of age, 20 per cent. presented this symptom at some time during the course of their disease. As a rule, no lesion except hemorrhage in the kidneys is observed. Retroperitoneal hemorrhage, as Barney noted, may produce sufficient congestion and pressure on the kidney to cause bleeding. Renal hemorrhage is usually slight and of brief duration; if severe, several transfusions of blood will often cause cessation of bleeding, since the donor's blood permits the patient's to clot close to normal for a sufficient time to allow the kidney lesion to heal. However, cases have been recorded in which death has resulted from renal hemorrhage in spite of transfusions.

Particular emphasis should be laid on the danger of overlooking the atypical and "sporadic" cases occurring in males without a family history of the disease, with only a few attacks of bleeding, and a coagulation time not strikingly prolonged. It is these mild cases that are the pitfalls in diagnosis, as illustrated by the following:

A man, aged 25, while playing baseball, slid to second base on his left side. At first he did not seem to be hurt, but within a few hours blood appeared in the urine and slight pain was felt in the left lumbar region. An exploratory operation was done; the kidney was found apparently normal and left intact. Abnormal bleeding from the wound occurred and persisted for twenty-four hours. At this time one of us first saw the patient. He had given no history of previous severe hemorrhage, but it was learned that at least on two

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* Read before the Section on Urology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.
* From the Fourth Medical Service of the Boston City Hospital and the Medical Service of the Collis P. Huntington Memorial Hospital of Harvard University.
* This paper, together with those of Drs. Leon Herman and A. L. Chute, is part of a symposium on the treatment of neurosyphilis. The remaining papers, by Drs. G. R. Livermore, B. A. Thomas and W. H. McNeill, together with the discussion, will appear next week.

1. Barney, J. D.: Boston M. & S. J. 189:486 (Oct. 11) 1923.

previous occasions he had had what was probably an extravasation of blood into the left elbow joint, and several times had noted on his extremities a large black and blue spot following insignificant trauma. At one time, the extraction of a tooth was followed by continuous bleeding for fourteen hours. No family history of hemophilia could be obtained; he had no brothers, maternal aunts or male cousins.

It took twenty minutes for the venous blood to clot (modification of Lee-White method for determining the coagulation time) as contrasted with the normal of twelve to fourteen minutes, and with an hour or more so often seen in cases of hemophilia. The reclotting phenomenon was present, but the clot retracted well. The blood platelets were slightly increased in number, and the bleeding time was normal. The hemoglobin was 65 per cent., and the red blood corpuscle count 3,900,000 per cubic millimeter.

Two transfusions of 600 c.c. of blood were given on two successive days, with the result that the coagulation time remained under twelve minutes for three days, during which time bleeding from the wound and the hematuria ceased. Complete recovery followed, and the patient has remained well for the two years since the operation. The coagulation time has varied from sixteen to twenty-eight minutes. Only once has the patient had any signs of pathologic hemorrhage, when there was a small effusion of blood into one of the thumb joints, and at the same time a large hematoma appeared in the thigh.

This case illustrates the importance of obtaining a careful history, especially with reference to any record of blood loss. Usually, bleeding can be explained on other grounds than a pathologic blood condition; but, when doubt arises, properly performed tests should be made to determine the state of the factors associated with blood loss due to pathologic conditions of the blood. It is important to remember, however, that the degree of alteration from the normal, and especially the degree of prolongation of the coagulation time, does not necessarily indicate the severity of the bleeding that may occur. Correct judgment as to the significance of such tests is, therefore, as necessary as the tests themselves.

Other Conditions Than Hemophilia with Prolongation of the Coagulation Time of the Blood.—Hematuria occurs in several other diseases than hemophilia as a result entirely or partially of an increased coagulation time of the blood; for example, hemorrhagic disease of the new-born, some cases of sepsis, obstructive jaundice, severe liver disease, erythremia, and the rare hemorrhagic diathesis of chronic nephritis. The two latter conditions are worthy of special mention.

In erythremia (polycythemia vera, Vaquez disease), the occurrence of hematuria may lead to error in diagnosis. Pathologic hemorrhage in erythremia is not rare, and is associated with a marked increased viscosity of the blood due to the polycythemia, which leads to a prolonged coagulation time and a clot that may not retract in spite of a normal number of blood platelets. The additional factors of vascular engorgement, with marked dilatation of capillaries and the formation of small thrombi—all classical of the disease—unquestionably favor blood loss, which may come from the kidneys. The urine in erythremia may be so abnormal as to suggest the presence of a nephritis, but nephritis is rarely found.

In those cases of erythremia showing the typical erythrosis and enlargement of the spleen, diagnosis is seldom in doubt. In rare instances, however, these patients have a normal color or even look pale, and the spleen may not be made out enlarged. It is only by a complete histologic examination of the blood that a correct diagnosis can be established. We have seen cases of erythremia in which hematuria was the presenting symptom. In one case, profuse hematuria due to vascular engorgement and hemorrhage into the kidneys led to the diagnosis of renal calculus; as in another, a similar lesion causing the presence of transient palsies, a common symptom of erythremia, was responsible for the mistaken diagnosis of brain tumor. Subsequent to operation, repeated blood examinations in both instances established the diagnosis of erythremia.

Profuse hematuria may be a symptom of a rare form of hemorrhagic diathesis occurring in chronic nephritis. In this condition, the coagulation time of the blood is only slightly prolonged, but the colloidal state of the blood seems seriously altered, probably dependent on increase of the hydrogen-ion concentration. The result is that profuse pathologic hemorrhage occurs into and from many parts of the body. We have seen three such cases, which showed, a few days before death, marked hematuria and multiple ecchymoses over the body. The platelets were not diminished. Anemia became extreme. The edema was slight. The systolic blood pressure was not above 140 mm. of mercury. The cases were not explained until necropsy showed chronic nephritis. In each case, the kidneys were very small, the weight of both being about 85 gm.

Marked Decrease of the Blood Platelets.—Purpura Hemorrhagica or Thrombopenic Purpura.—The second form of blood defect that leads to pathologic hemorrhage is associated with thrombopenia (decrease of the blood platelets). Hematuria, depending wholly or partially on the lack of the blood platelets, is more frequent than its occurrence in the first form of blood alteration discussed; namely, prolongation of the coagulation time. With marked decrease of blood platelets, which remain functionally normal, the blood often clots in normal time, though clot retraction is absent, and a prolonged bleeding time frequently present, characteristics directly opposite to those observed in hemophilia.

Marked decrease of the blood platelets is an essential feature of thrombopenic purpura, a condition in which there is spontaneous bleeding not dependent on trauma, but often intensified by it. This condition may express itself as an idiopathic disease (idiopathic thrombopenic purpura or purpura hemorrhagica) in an acute, subacute and chronic form. The condition also may occur as a symptom in numerous diseases (symptomatic thrombopenic purpura or purpura hemorrhagica).

Hematuria, more often slight, but sometimes extreme, is almost invariably present in all acute or subacute cases of idiopathic thrombopenic purpura that end fatally. It occurs less often in the cases in which there is recovery. Hematuria in all forms of idiopathic thrombopenic purpura is seldom a leading symptom, and because of the usually striking objective signs of the disease, difficulty in diagnosis seldom need occur.

The chronic form of the disease has often been mistaken for hemophilia. This mistake is easily avoided if an adequate study of the patient and his blood is made. Chronic thrombopenic purpura occurs in both males and females. It is sometimes congenital, though symptoms may not become evident until adolescence. An acquired form is not uncommon. The disease runs a course over many years, and extensive purpura is rare. The patient will usually give a history of bruising and bleeding easily but not severely, or of having observed a few petechiae in various parts of the body. Women frequently suffer no symptoms whatever, except abnormally profuse and prolonged menstruation, and its

resulting symptoms of anemia. In most of these chronic cases, the platelets remain permanently below normal, though there may be considerable fluctuation in their numbers, generally coinciding with the intermittent increase or decrease of symptoms. When other signs of hemorrhage are pronounced, there is seldom difficulty in finding at least a few red blood corpuscles in the urine. In rare instances, brisk hematuria may develop and be the symptom that brings the patient to the physician, as in the following case:

A man, aged 18, entered the hospital because of gross blood in the urine and pain resembling renal colic. Previously, on several occasions, the patient had noticed a little blood in the urine, but never any pain. Physical examination revealed no evident abnormality, and a diagnosis of renal calculus was made. A few days later, a small black and blue spot was found on the forearm. This led to inquiry regarding previous abnormal blood loss. He then stated that he had always bruised easily, and once or twice in recent years had had very large black and blue areas. A search of the skin revealed a few tiny petechiae about the ankles and right elbow. When his attention was directed to them, he recalled that he had not infrequently seen a few such spots, but had given them no thought. The patient's blood showed the typical features of chronic thrombopenic purpura. The blood platelets were 85,000 per cubic millimeter. The coagulation time was normal, but the clot soft and nonretractile. The bleeding time was prolonged slightly. There was but little anemia. The patient has continued to show these blood defects, and at any time tiny, subcutaneous hemorrhages can be found; but no further hematuria has been observed.

Symptomatic, Thrombopenic Purpura or Purpura Hemorrhagica.—This is a symptom occurring with a considerable variety of diseases. The blood platelets may be reduced principally in two ways. 1. There may be an increased destruction or abnormal removal of them from the circulation. Such a process appears to occur at times in some infectious diseases, such as tuberculosis and diphtheria, and following injections of such substances as peptone, Hematuria may occur under these circumstances, but is rare. 2. In other cases there is a decreased formation of platelets from their parent cells, the megacaryocytes of the marrow. This may be brought about by poisonous substances that directly affect the megacaryocytes or the whole marrow, leading to complete aplasia. This occurs, for example, in infections such as influenza, in chemical poisoning, as with benzene, and in aplastic anemia. The decreased formation of the platelets can also occur from a crowding out of their parent cells by abnormal cells, as in the case of multiple bone metastases of malignant tumors, in leukemia and in pernicious anemia.

With symptomatic thrombopenic purpura, hematuria not infrequently appears when the decrease of platelets is extreme, which is usually when other symptoms of the disease are marked. Hematuria is more common in some diseases with decrease of the platelets than in others. It is much more infrequent with pernicious anemia than with leukemia. This is due to the fact that, besides the decrease of platelets, there is an additional factor for hematuria in leukemia.

In chronic lymphatic leukemia, it is the rule for the platelets constantly to remain low, while in chronic myelogenous leukemia they often fluctuate within very wide limits, sometimes being exceedingly few, and at other times greatly increased above normal. In both types of leukemia, the diminished platelets and state of the blood are not the sole factors that cause hematuria, for leukemia infiltration and myeloid metaplasia often give rise to nodules in the kidney, while enlargement of neighboring lymph nodes produces venous engorgement of the organ. These pathologic changes seem to explain the frequent presence of albumin and casts, as well as blood in the urine, though undoubtedly the blood state can favor blood loss and alone account for the hematuria.

Hematuria has been observed in 15 per cent. of our 110 cases of chronic myelogenous leukemia, a marked degree being observed in only two cases. This symptom occurred in 20 per cent. of our eighty cases of chronic lymphatic leukemia. In 8 per cent. it was marked, and associated with quite intense pain and enlargement of lymph nodes within the abdomen. These symptoms disappeared under irradiation. In only one of the cases did hematuria arise when other signs of leukemia were not most manifest. Hematuria associated with thrombopenia occurs in both forms of acute leukemia, especially as a late manifestation, when it is common and may be marked.

Hodgkin's Disease and Lymphosarcoma.—These conditions, like lymphatic leukemia (including the aleukemic form), may be the cause of large masses of lymph nodes that sometimes encroach on the genitourinary tract. These can cause severe paroyxysms of pain simulating appendicitis, renal stone or perirenal disease. In these conditions growths occasionally occur in the kidney and rarely in the prostate. As a result of such pathologic changes, hematuria, usually painless, may occur. The blood platelets, in Hodgkin's disease and lymphosarcoma, are usually increased and very rarely diminished, in contrast to their usual diminution in lymphatic leukemia. In the former diseases, it is the local state of the tissues, and not that of the blood, which permits hematuria, while one or both of these factors may be the cause in lymphatic leukemia. The combination of paroxysms of abdominal pain and hematuria in these diseases of the lymphatic tissue, though rare, may occur when external manifestations of disease are slight, or quite overshadow them. We have seen three such instances among approximately 125 cases.

DISEASES AND CONDITIONS RESEMBLING THOSE WITH ABNORMALITIES OF THE BLOOD

Idiopathic Purpura.—Purpura and blood loss are symptoms that occur in numerous conditions in which there is no detectable, or, at least, no constant, abnormality of the factors of the blood associated with pathologic hemorrhage. When this is the case, in contrast to the true hemorrhagic diseases, abnormal bleeding from wounds does not occur unless a purely local cause is present. The abnormal escape of all or some of the blood constituents from the vessels may be dependent on alterations of blood vessel permeability or a variety of changes in the tissues locally. The commonest condition that resembles disease associated with known defects of hematopoietic function, and in which bleeding including hematuria occurs as a prominent symptom, is idiopathic purpura.

Idiopathic purpura is a frequently recurrent, rarely fatal morbid state, characterized by purpura and often associated with other exudative skin lesions, joint manifestations and visceral symptoms, but, in contrast to thrombopenic purpura, without known pathologic changes of the blood. Idiopathic purpura superficially resembles serum sickness, and is a very protean disease. Children and young adults are chiefly affected. The various focal lesions, both external and internal (purpura, erythma, urticaria and edema), can best be

explained as due to the extravasation of varying proportions of formed elements and plasma from the blood, and to local vascular changes. A division of the cases of idiopathic purpura according to the anatomic distribution of the lesions, namely, purpura simplex when only purpuric skin lesions appear, purpura rheumatica or Schönlein's disease if joint symptoms are combined with purpura, and Henoch's purpura when the intestines are involved, has led to considerable confusion. Almost any combination of skin, joint and visceral lesions is possible. Rather commonly, the presence of albumin, casts and blood in the urine is associated with foci of hemorrhage and edema in the kidney. These findings, together with a low renal function, suggest the presence of an acute nephritis; but Christian [2] has found no evidence of a true nephritis or other important permanent damage to the kidney. The degree of hematuria seems to follow rather closely the severity of the disease, but the kidney as well as the intestinal manifestations may precede the skin lesions or appear long afterward. The blood in the urine is occasionally profuse, and bleeding may persist for weeks. A varying number of red cells are frequently present in the urine in these cases, even those of the mildest form. Similar findings in the urine of young people without obvious exudative skin lesions should always suggest the possibility of an obscure idiopathic purpura, and careful questioning will sometimes bring out a history of recurring urticaria, purpura, erythema or angioneurotic edema. Diagnostic errors regarding the interpretation of hematuria will be lessened if in every such case the entire body is carefully searched for exudative lesions, and the past history minutely investigated with this point in mind.

Simple Symptomatic Purpura.—Like symptomatic purpura hemorrhagica, simple symptomatic purpura may occur with the infectious diseases, as well as in various chronic affections, toxic states, from drugs, etc., but, unlike the latter, is not associated with any constant known changes in the blood. Bleeding from the urinary tract with simple symptomatic purpura is distinctly unusual and much less common than with idiopathic purpura.

Scurvy.—Particularly in adults, scurvy may resemble diseases with known blood defects, and the disease is to be kept in mind as a possible explanation of a rare case with hematuria. It is said to occur more commonly with the infantile form of scurvy, and may even be the first symptom.

Familial Hematuria.—Several authors [3] have described recurrent hematuria of unknown origin occurring in numerous members of a family. We have seen one example of this condition, but unfortunately had no opportunity of studying the case. It is well known that angiomas and varicosities in the renal pelvis are the source of the blood in the urine in certain obscure cases, and it seems plausible that such lesions may explain hematuria in these rare familial cases. The condition may be perhaps quite comparable to hereditary telangiectasia and to the condition of familial hemoptysis described by Libman and Ottenberg.[4]

INFECTIONS

Blood of varying amounts in the urine is a relatively common symptom in many infectious diseases, and, in the case of those running a very severe course, the bleeding may be profuse. During convalescence, also, red blood corpuscles in the urine are frequently observed. Pathologic conditions of the blood may be the cause of the hematuria, as has been noted above. This is, however, less common than the direct effect of bacterial infection; that is, a toxemia producing actual local lesions in the kidneys which may be slight or sufficiently severe to cause a marked acute nephritis. Likewise, focal infection, as following septic infarcts, may develop. Congestion of the kidneys is undoubtedly a factor in the pathologic conditions in many instances, and may occur combined with inflammation from localized infection in adjacent structures, which in itself may cause hematuria.

Among the more important of the infectious diseases in which blood in the urine occurs are typhoid, typhus, scarlet fever, smallpox, diphtheria, malaria, dysentery, influenza, yellow fever, cerebrospinal meningitis, icterohemorrhagic spirochetosis, acute and subacute endocarditis and septicemia. Focal infections in general, but particularly those adjacent to some portion of the genito-urinary tract, may be responsible for hematuria. Seelig [5] in 1908 called attention to hematuria as a complicating factor in appendicitis, and Gottlieb [6] has recently collected reports of thirty-six cases. Further examples of focal infections of this type are pelvic abscess, pyosalpinx, intestinal tuberculosis, pericystitis and perinephritic abscess.

CONDITIONS CAUSING CHRONIC PASSIVE CONGESTION OF THE KIDNEYS

Several writers have given considerable prominence to the stasis of blood as a factor in producing bleeding from the kidneys. This undoubtedly holds true for chronic cardiovascular conditions with chronic passive congestion and, as noted above, is a special feature with polycythemia. It also probably plays a part in some severer cases of generalized and local infection, and in cases in which other conditions permit local increased venous pressure or pyelovenous back flow, so well described by Hinman and Lee-Brown.[7]

Red blood corpuscles are almost constantly present in the urinary sediment when passive congestion of the abdominal organs exists, but gross hematuria is a very rare occurrence. Aschner [8] lays stress on aseptic infarction of the kidney in patients with valvular disease of the heart as explaining the presence of blood observed with the microscope, or even the presence of a small amount seen with the naked eye.

TOXIC AGENTS

A great variety of toxic agents may induce bleeding from the kidneys, the amount of blood loss depending almost directly on the intensity of the toxic action produced. For the most part, the bleeding is relatively slight; but, in rare instances, actual profuse hemorrhage is seen. The most important changes, singly or combined, that are responsible for hematuria are (1) direct effects on the kidney, causing injury, congestion or an increased permeability of the blood vessels, and (2) the effects of the toxic agent on the blood.

The most common of the toxic agents are the bacterial toxins, the action of which has already been referred to under infectious diseases. Closely resem-

2. Christian, H. A.: Oxford Medicine **2**: 779, 1920.
3. Pearson, H. B. A.: Lancet **1**: 91, 1904. Guthrie, L. G.: Ibid. **1**: 1243, 1902. Neave, S.: St. Bartholomew's Hosp. J., London **13**: 123, 1905-1906.
4. Libman, E., and Ottenberg, R.: J. A. M. A. **81**: 2030 (Dec. 15) 1923.
5. Seelig, M. G.: Am. J. Surg. **48**: 388, 1908.
6. Gottlieb: Ztschr. f. Chir. **151**: 1, 1924.
7. Hinman, F., and Lee-Brown, R. K.: J. A. M. A. **82**: 607 (Feb. 23) 1924.
8. Aschner, P. W.: Am. J. M. Sc. **164**: 386 (Sept.) 1922.

bling these in their action are the poisonous products of tissue change; for example, the passage of hemoglobin in considerable amounts through the kidney, or the substances produced in eclampsia.

Various corrosive and irritant poisons, such as mercuric chlorid, phenol (carbolic acid), turpentine, cantharidin, and some industrial poisons also form a small but somewhat important group.

Numerous drugs, usually only when taken in excessive amounts, are by no means infrequent causes of hematuria. Hexamethylenamin, phosphorus, quinin, the coal tar products, and the various derivatives of salicylic acid are among the most common.

Squier and Newburgh [9] obtained very striking results in their experimental studies on the renal irritation resulting from a high protein diet. Not only did they find that a high protein diet invariably and almost immediately produced red blood corpuscles in the urine in seven ward patients with hypertension, but also in healthy young men. In each of the five normal persons, the ingestion of two forced meat meals was sufficient to cause red blood corpuscles to appear in the urine, which at once disappeared when a normal diet was resumed.

MISCELLANEOUS CONDITIONS

Only a few of the many rare causes of hematuria not classified above merit even brief mention. Oxaluria is an excellent example of several conditions described as due to some disturbance of metabolism, which occasionally present the symptom hematuria. The bleeding is rarely pronounced.

During pregnancy, blood may be found in the urine. Quigley [10] has recently studied this association of hematuria with pregnancy, and expresses the opinion that it is due to a toxemia and an evidence of an acute nephritis. Others have suggested that its origin is to be found in the renal varices developing with pregnancy.

Nassau [11] says that hematuria is very often observed in children, especially in the asthenic type and at about the time of puberty. This author found it associated with albuminuria in one third of his series of cases, and accounts for the bleeding on the basis of an increased permeability of the renal vessels. Other symptoms are never present, notwithstanding the fact that the amount of blood lost is sometimes considerable. It might be questioned whether some such cases are not instances of idiopathic purpura. It is a well known fact that very violent and prolonged exercise often leads to transitory changes in the urine, characteristics of an acute nephritis. Though profuse hemorrhage is never seen under such circumstances, the urine may present a marked smoky appearance. The sediment very frequently contains many red blood corpuscles. A very little known form of renal bleeding is that which is termed paroxysmal hematuria, to be distinguished from paroxysmal hemoglobinuria. It occurs immediately after severe chilling of the body surface, as in immersion, or great exposure to cold. After from twenty-four to forty-eight hours, the urine becomes normal.

Many other rare and consequently unimportant causes of hematuria might be enumerated. An attempt has been made to discuss only the principal diseases and conditions, apart from those of the genito-urinary tract itself, with which the special symptom under consideration may be associated.

9. Squier, T. L., and Newburgh, L. H.: Arch. Int. Med. **28**: 1 (July) 1921.
10. Quigley, J. K.: Am. J. Obst. & Gynec. **1**: 372 (Jan.) 1921.
11. Nassau, E.: Ztschr. f. Kinderh. **29**: 133 (June) 1921.

RENAL HEMATURIA *

LEON HERMAN, M.D.
PHILADELPHIA

I take it that symposiums on hematuria are held to stress primarily the grave significance of blood in the urine. In very exceptional cases, a correct diagnosis can be made on the gross characteristics of the hematuria alone. In the vast majority of instances, hematuria merely indicates to the experienced observer the necessity for a complete urologic study, without which neither the cause nor the source of the bleeding can be determined with certainty.

TABLE 1.—*Tabulation of One Hundred and Fifty Cases with Surgical Lesions of the Kidney*

	Number
Cases with hematuria:	
Carcinoma of the renal pelvis	1
Hypernephroma	1
Essential hematuria	2
Pyelitis (uncomplicated)	20
Pyonephrosis	2
Nephritis (chronic)	1
Pyonephrosis and perirenal abscess	1
Tuberculosis (unilateral)	2
Tuberculosis and congenital deformity	1
Tuberculosis (bilateral)	1
Calculus (renal)	12
Calculus, renal and tuberculous	1
Calculus, renal and hydronephrosis	2
Calculus, renal, bilateral	2
Calculus, renal, bilateral and severe pyelonephritis	1
Calculus, ureteral	8
Calculus, ureteral and vesical	1
Calculus, ureteral and urethral stricture	1
Hydronephrosis	2
Polycystic kidneys	2
Ruptured kidney	1
	65
Cases without hematuria:	
Hypernephroma	2
Pyelitis (uncomplicated)	32
Pyelitis, double ureter	1
Pyonephrosis	2
Atrophic pyelonephritis	1
Infected hydronephrosis	2
Tuberculosis (unilateral)	1
Tuberculosis (bilateral)	2
Calculus, renal	16
Calculus, renal, bilateral	1
Calculus, ureteral	16
Calculus, ureteral with hypertrophy of prostate	1
Nephroptosis	4
Ruptured kidney (horseshoe)	1
Stricture of ureter	1
Torsion of kidney	1
Polycystic kidney with acute pyelonephritis	1
Kinked upper ureter	1
	85

SUMMARY

Renal lesions with hematuria, 43.3 per cent.
Renal lesions without hematuria, 56.7 per cent.
Hematuria due to calculus, tuberculosis or infection, 86.1 per cent.
Of the nonbleeding cases, calculus, tuberculous, and infection comprised 81.2 per cent.
Among the patients with hematuria, 36 (55.3 per cent.) had macroscopic bleeding.

The term hematuria, which is defined as the discharge of urine containing whole blood, implies no differentiation between gross and microscopic amounts of blood. The occasional finding of a few red blood cells in the routine study of the urine is not uncommon in the absence of surgical affections of the genito-urinary organs, so that, unless the blood is persistent or is associated with other symptoms, it has little clinical significance. The persistent presence of even a few erythrocytes in the urine usually denotes a lesion in or adjacent to the urinary tract, and hematuria of this type has real clinical significance.

We find that hematuria is a rather rare symptom among general hospital admissions; approximately 3.9 per cent. of the patients admitted to the Pennsylvania Hospital of Philadelphia give the history of having

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passed bloody urine, or are found on examination to have microscopic hematuria. We find that 43.3 per cent. of our kidney cases present hematuria, and that in 61.5 per cent. of the bleeding cases, the hematuria is macroscopic (Table 1). MacKenzie [1] states that 21.6 per cent. of 3,800 patients with urogenital disease had hematuria, and among Lower's [2] 2,922 patients, hematuria occurred in 798, or 26 per cent. These figures are impressive of the fact that with, relatively few exceptions, hematuria is symptomatic of disease primarily resident in the genito-urinary organs.

It is a regretable fact that hematuria, when unassociated with other symptoms, is frequently disregarded, unless its profuseness or persistence necessitates surgical consultation. On this fact more than any other depend the lamentable results of the surgery of urogenital malignancy.

COMPARATIVE INCIDENCE OF HEMATURIA FROM THE UPPER AND LOWER URINARY TRACTS

The combined statistics of MacKenzie,[1] Kretschmer [3] and Walther,[4] comprising 1,096 cases with hematuria, give an average incidence of 39.7 per cent. from the upper urinary tract and 60.3 per cent. from the lower urinary tract. In MacKenzie's series of 821 cases, the upper urinary tract contributed 52.7 per cent. of hematurias, and the lower urinary tract 47.3 per cent. The reverse was true in Walther's smaller series of seventy-eight cases, of which the lower urinary tract contributed 77 per cent. In Chute's [5] series of 100 cases, only twenty-eight were due to renal lesions, and in half of the cases the bleeding came from bladder tumors. In Kretschmer's series of 197 cases, the upper urinary tract contributed 42.6 per cent., the lower urinary tract 57.4 per cent.

The universal discrepancies in statistics relating to the comparative incidence of hematuria are evident in the fact that MacKenzie attributes 19 per cent. to inflammatory lesions of the kidney, while Walther gives 3.8 per cent. as the incidence rate for inflammatory bleeding. This is explained perhaps by the fact that one writer will include only gross hematuria in his statistics. Gross, painless hematuria is usually of bladder origin and symptomatic of tumor; and, while the majority of renal tumors in adults cause profuse hematuria, we must remember that there are eight or ten bladder tumors for each kidney tumor.

Microscopic hematuria is found frequently in association with acute nephritis and infections of the pyelonephritic type, although in the latter group bleeding may come from secondary infection of the lower urinary tract. Terminal bleeding in these cases is very likely to direct one's attention from the primary focus in the kidney.

It is dealing in broad generalizations but nevertheless true to say that the majority of gross hematurias are of bladder origin and symptomatic of tumor, while the majority of microscopic bleedings are the result of inflammatory lesions primarily resident in the upper urinary tract.

RELATION OF THE INCIDENCE RATE OF HEMATURIA TO THE PRIMARY CAUSE

Simple inflammation, calculus formation and tuberculosis account for more than twice as many renal hematurias as all other lesions combined, including tumors. The comparative rate of incidence of hematuria in these conditions is relatively low, and the fact that 86.1 per cent. of our own cases and 69.8 per cent. of the collected series of cases of renal bleeding is attributable to them is due simply to their overwhelming frequency. Many of the rarer renal lesions give a much higher proportion of hematurias, especially of the profuse type, for in none of the three diseases mentioned does gross hematuria constitute an important symptom. In fact, if only gross bleeding is taken into account, the statistical data will present marked differences. Our collected figures show that renal tumors account for 15 per cent. of renal hematurias, and these statistics represent the average in several series in which the incidence rate differs beyond the limits of reasonable variation. MacKenzie [1] found only 2.9 per cent. of renal hematurias caused by new growths, while Chute,[5] in a series of 100 cases, has found twenty-eight of renal origin, and eight (30.4 per cent.), of these were associated with hypernephromas.

I think no one will question the assertion that less than one of three renal hematurias is due to neoplasms; one in thirty would probably more nearly express the true ratio of incidence if both gross and microsocpic bleeding is taken into account. Mixter [6] states that only two of twenty-seven children with mixed tumors of the kidneys had gross hematuria. This gives an incidence rate of 7.5 per cent., but in this series there were seven additional cases with microscopic bleeding, making a total incidence rate of 30 per cent., which corresponds closely to the figures of Denaclara,[7] who found hematuria in 38.9 per cent. of 132 cases. It is of interest to note that there was gross bleeding in 55.3 per cent. of our renal cases with hematuria; 21.1 per cent. of our uncompleted pyelitis cases are associated with bleeding, and in 55 per cent. of the bleeding cases there is microscopic blood.

TABLE 2.—*Relation of the Occurrence of Renal Hematuria to the Primary Cause*

	Per Cent.
Acute hemorrhagic nephritis (Bright's)	100.0
Angioma of renal pelvis	100.0
Essential bleeding	100.0
Traumatic injury	90.0
Papilloma of renal pelvis	69.4
Primary carcinoma of ureter	68.5
Renal calculus in children	57.0
Carcinoma of kidney	56.0
Acute nephritis (Bright's)	50.0
Ureteral calculus	49.0
Hypernephromas	44.2
Renal calculus in adults	40.0
Polycystic disease	40.0
Mixed renal tumors in childhood	38.9
Renal tuberculosis	32.0
Echinococcus cysts	27.7
Simple infections	25.0
Simple cysts	10.0
Hydronephrosis	3.4
Suprarenal tumors	3.0

Ureteral calculi are more frequently associated with macroscopic bleeding than with gross bleeding; but, because they give rise to characteristic pain, the urine is examined as a routine, and any blood encountered is charted as hematuria. It is said that renal stones are more frequently associated with hematuria than are ureteral stones, and this is true if only gross bleeding is taken into consideration (Fig. 2).

The accompanying table gives an incidence rate of 32 per cent. for hematuria in renal tuberculosis. These figures are quoted from Brady [8] in a series of seventy-

1. MacKenzie, D. W.: Canadian M. A. J. **14**: 41 (Jan.) 1924.
2. Lower, W. E.: Surg., Gynec. & Obst. **38**: 360-363 (March) 1924.
3. Kretschmer, H. L.: Hematuria, J. A. M. A. **68**: 598 (Feb. 24) 1917.
4. Walther, H. W. E.: M. Rec. **91**: 854 (May) 1917.
5. Chute, A. L.: Boston M. & S. J. **182**: 623 (June 17) 1920.
6. Mixter, C. J.: Ann. Surg. **76**: 52 (July) 1922.
7. Denaclara: New York M. J. **102**: 1093 (Nov. 27) 1915.
8. Brady, L.: Bull. Johns Hopkins Hosp. **32**: 13 (Jan.) 1921.

seven cases in which operation was performed, and we are more inclined to agree with Kelly [9] that in almost every case of tuberculosis there is blood in the urine at some stage of the disease.

Approximately 3 per cent. of renal hematurias are caused by traumatic injury, a relatively high incidence rate but explainable on the basis that almost all renal injuries cause hematuria.

Seven per cent. of cases of renal bleeding are attributable to essential bleeding, hydronephrosis, movable kidney, simple cyst, polycystic kidney, ecchinococcus cysts, and other rare conditions. It is in this group that we frequently encounter the greatest diagnostic problems, often because an accompanying hematuria is so easily misinterpreted.

According to Braasch,[10] 40 per cent of polycystic kidneys bleed considerably, and Garceau [11] states that microscopic blood can be found in the urine in practically every case.

THE PATHOGENESIS OF RENAL BLEEDING

Renal hemorrhage results from trauma, from vascular congestion, or from the ulcerative destruction of vessels normal to the organ, or those formed in association with the development of tumors. Hemorrhage primarily due to congestion may be continued as the result of ulceration, especially in inflammatory lesions. In cases of acute nephritis of the Bright's type there is almost invariably some blood in the urine which is derived from congested parenchymal vessels. Hill,[12] in a discussion of acute nephritis in children, draws a clear line of differentiation between an acute hemorrhagic type and an acute exudative type, but the primary change, whatever the type and whatever the inciting cause, is in all probability vascular congestion. In the exudative types, this primary congestion is soon overshadowed by cellular degeneration, and the swollen tubular epithelium obliterates the tubular lumina and empties the engorged vessels through pressure, with the production of the large, white kidney characteristic of wet nephritis. The hemorrhagic type causes gross bleeding with few other abnormal urinary findings and, in the vast majority of cases, the kidneys recover, for the reason that congestion is the principal pathologic factor. The exudative type is associated with abnormal elements in the urine indicative of greater cellular destruction, and chronic nephritis is more likely to follow the acute stages than in cases of hemorrhagic nephritis.

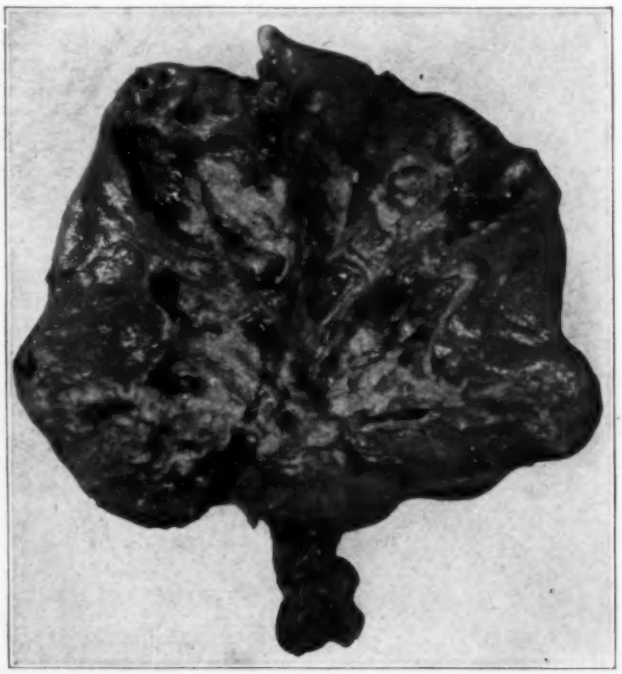


Fig. 1.—Rapidly destructive tuberculosis of the kidney: type associated often with gross hematuria, showing ulcerative destruction of the apexes of the pyramids.

The acute medical nephritides differ widely from the acute surgical inflammations of the kidney, such as acute unilateral hematogenous nephritis, and carbuncle of the kidney; and since we know that the latter are caused by the implantation of blood-borne bacteria, it is reasonable to believe that the former are due to toxins alone. According to Hill,[12] acute nephritis in children commonly follows acute tonsillitis, and acute tonsillitis is likewise the primary factor in many surgical inflammations of the kidney. In the acute surgical renal inflammations, urinary symptoms are few, and hematuria is seldom associated. The urine is noted for its essential normality, although a few red blood cells may be found, and the explanation probably lies in the fact that, owing to the intesity of the inflammation, the renal tubules are excluded and the inflammatory products cannot be carried to the excretory channels.

Hematuria is rarely associated with chronic interstitial nephritis; in reviewing a group of medical nephritis cases, I found no instance of gross bleeding except in cases with acute exacerbation of chronic nephritis of the wet type. In the absence of hematuria in the symptom complex of these, the end-products of renal inflammation, one certainly finds justification for reasonable doubt regarding the inflammatory origin of essential bleeding, although Schuppel,[13] Buerger and others have reported cases of idiopathic hematuria in which examination of the kidney showed incipient senile contraction. The fact that bacteria concerned with pyelonephritis are prone to localize in the pyramidal lymphatics may explain the production of scar tissue with varicosities of the pyramidal veins which, according to Payne and MacNider, are the source of certain obscure hematurias. Some significance may attach to the demonstration by Cavina [14] that essential bleeding is due in certain instances to changes in the capillaries and arterioles of the parenchyma and pelvic walls, with demonstrable hemorrhage into Bowman's capsule.

Hematuria due to uncomplicated acute pyelonephritis is the result of vascular congestion, and is rarely profuse. Chronic pyelitis, especially of the granular type, may cause excessive bleeding as the result of congestion together with the rupture of small, new-formed vessels, and it is not uncommon to find a considerable quantity of degenerated residual blood in the pelvis. The differentiation between bleeding, infected hydronephrosis and intrapelvic tumor is exceedingly difficult.

Renal congestion due to pressure on the pedicle by extrarenal tumors, suprarenal tumors, aneurysm and renal torsion accounts for a small number of renal

9. Kelly and Burnam: Diseases of the Kidneys, Ureters and Bladder **2**: 59.
10. Braasch, W. F.: Surg., Gynec. & Obst. **23**: 697 (Dec.) 1916.
11. Garceau: Tumors of the Kidney, 1909.
12. Hill, L. W.: Acute Nephritis in Childhood, J. A. M. A. **73**: 1747 (Dec. 6) 1919.
13. Schuppel: Ztschr. f. Urol. 6: 201.
14. Cavina: Riforma med. **37**: 843 (Sept.) 1921.

bleedings, and, in the case of aneurysm, a slight primary hemorrhage due to congestion may be succeeded by gross, and even fatal bleeding, as the result of the intrapelvic rupture of the aneurysm.

Hematuria that results from bleeding directly into the pelvis of the kidney is likely to present differences, both gross and microscopic, from that in which the blood has traversed the uriniferous tubules. In the latter types, the bleeding is likely to be less in amount, is rarely clotted and is often associated with blood casts, especially if the lesion is inflammatory. In cases of hemorrhagic nephritis, the bleeding may persist despite the disappearance of casts, so that one is prompted to question the primary diagnosis.

Bleeding directly into the renal pelvis may be the result of lesions primary in the pelvis, of traumatic rupture, or of lesions arising in the parenchyma or elsewhere, and effecting secondary communication with the

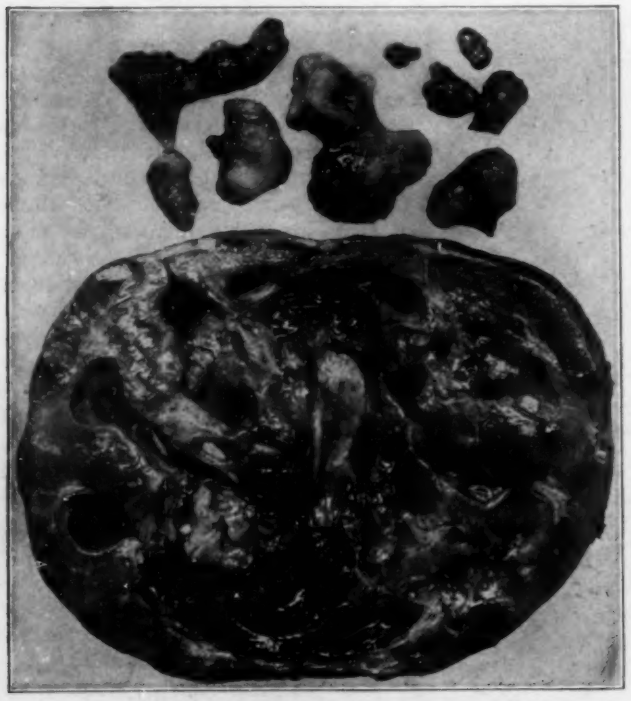


Fig. 2.—Extensive calculus formation in renal parenchyma. This patient had gross hematuria one year before the kidney was removed.

pelvis as the result of ulceration. Tuberculous ulceration and the necrosis of parenchymal tumors that have invaded the pelvis are productive of the majority of gross renal hematurias of extrapelvic origin. The bleeding is often profuse and associated with clots, especially in the hypernephromas, since the hemorrhage results from necrosis of the condensation capsule at the point of pelvic invasion so that the large vessels of the tumor open directly into the excretory duct. Infiltrative malignant tumors of the parenchyma, either of the tubular carcinomatous variety, or nonencapsulated hypernephromas, are characterized by profuse hematuria in the absence of palpable tumor or pain, and the excessive bleeding may necessitate nephrectomy in these cases, which might be treated otherwise as essential bleeding. In a remarkable case of infiltrative hypernephroma in the service of Dr. John Gibbon in the Pennsylvania Hospital, there was very slight hematuria, with gross hemorrhage into the perirenal space.

Intrapelvic papillomas are extremely vascular and friable, and hematuria is correspondingly common in this condition. The bleeding is usually profuse, and clot formation with clot colic is commonly associated. The flat or nonpapillary malignant pelvic tumors are infiltrative and, while ulceration commonly occurs, the bleeding is less likely to be profuse than in papillary tumors. We have had two squamous cell carcinomas of the renal pelvis during the last year, both of which gave the history of hematuria; but, at the time of examination, closed kidneys were found, the growths having obliterated the upper ureter in each instance. In one case, active bleeding came from a secondary implant in the lower ureter (Fig. 5). The diagnosis of carcinoma of the renal pelvis was made on the basis of closed kidney with secondary ureteral growth, and verified at operation. The tumor was a typical squamous cell carcinoma situated at the ureteropelvic junction (Fig. 4). In the second case, the upper ureter was likewise obliterated, but the neoplasm covered the entire mucosal lining of the true pelvis and calices.

Renal tuberculosis is almost invariably associated with some blood in the urine at some stage of the disease, and in many instances there is very marked bleeding. This is easily explainable on the basis of ulcerative communication between the lesion and the uriniferous tubules or by direct communication with the calices, especially when the disease involves the pyramidal apexes (Fig. 1). One of the most interesting clinical types is that in which there is apparent cure of renal tuberculosis after a single gross hemorrhage. We have studied two cases of this kind. Both patients were admitted with gross hematuria; in both, tubercle bacilli were found in the urine on one occasion, but the bleeding ceased suddenly, the urine became normal, and the differential renal studies, pyelography, etc., revealed no data diagnostic of tuberculosis. It would seem likely that a single small tuberculous area ulcerated into the calix, with subsequent obliteration of the diseased area.

Renal hematuria associated with parenchymal cysts is due to the rupture of such cysts as present in the pelvis, and, in the case of polycystic kidneys, the hemorrhage may be profuse, especially if the cysts rupture during the early stages of the disease, when the walls are more vascular.

In uncomplicated hydronephrosis, hematuria is a rare symptom; but in the infected cases and in the intermittent types, hemorrhage is not uncommon. The bleeding in the intermittent types may be profuse and is probably due to the intense congestion which, as Barney has shown experimentally, follows sudden complete ureteral occlusion. It is a question whether hematuria caused by ureteral stone is due to traumatic injury of the stone on the mucosa alone. We have observed cases in which the bleeding seemed to be of pelvic origin with stones situated in the lower ureter, although the factor of catheter trauma cannot be ruled out with certainty.

CONCOMITANT LESIONS OF THE KIDNEY GIVING RISE TO HEMATURIA

Renal tumor and stone occur together in many instances, but the incident varies with the several types of tumor. Thus, the mixed tumors of the kidney in childhood are rarely associated with stone, and only rarely are hypernephromas and stone found in the same kidney. Noguira[15] reports a case of hypernephroma associated with a stone weighing 400 gm. Hinman[16] reports a case of hypernephroma with stone in the opposite kidney, and Beneke observed a case of nonpapil-

15. Noguira: Am. J. Urol. **11**: 216, 1915.
16. Hinman, Frank: Surg., Gynec. & Obst. **24**: 669 (June) 1917.

lary carcinoma of the pelvis of one kidney with stone in the opposite kidney.

Some time ago, a patient was admitted to the Pennsylvania Hospital with hematuria and symptoms suggestive of ureteral stone. Roentgenograms revealed a stone in the intramural segment of the right ureter. After cystoscopic manipulation, the calculus came away,

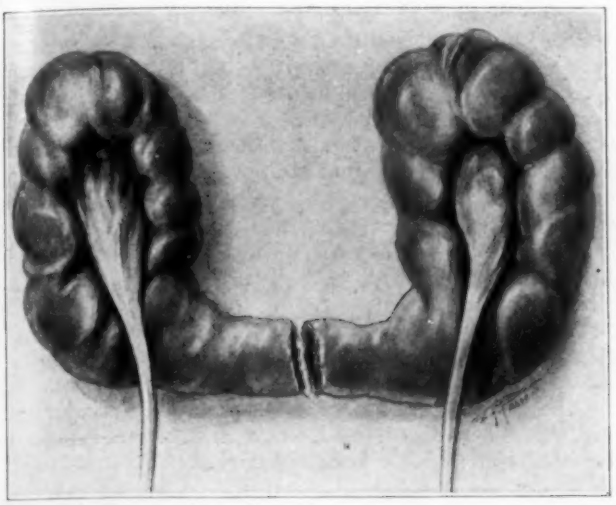


Fig. 3.—Traumatic rupture of the isthmus of a horseshoe kidney. This patient was crushed between two freight cars and died of intraperitoneal hemorrhage. There was no hematuria. In addition to the renal injury, the jejunum was ruptured in two places.

but the patient was found on routine examination to have solidification of the right lung. From the effects of this, he died, and at postmortem examination it was found that he had widespread metastases from a small hypernephroma of the right kidney.

According to Stevens,[17] calculi occur in 66 per cent. of renal carcinomas and in 20 per cent. of papillary epitheliomas. Intrapelvic tumors are likely to be associated with calculi, although the incidence rate as given by various authors differs to a very marked degree. Thus, Thomas and Regnier[18] report only 5 per cent. of 253 cases, while McCown[19] found ten of forty-eight cases of pelvic tumors associated with stone. Israel[20] is credited with the statement that the nonpapillary type of renal carcinoma is caused by the irritation due to stone, an opinion with which Bland Sutton and others are not in accord. Among Kretchmer's[21] collected series of forty-three cases of flat carcinoma of the renal pelvis, there were eleven associated with stone. The importance of this association is found in the symptomatic value of gross bleeding in cases in which the roentgenogram has shown the presence of a renal stone, a condition that should always excite the suspicion of a coexisting neoplasm.

Simple infections, tumors, hydronephrosis, tuberculosis and polycystic kidney are commonly associated with calculi, and the occurrence of profuse renal hemorrhage is suggestive evidence that an apparently simple pyelonephritis masks a more serious lesion. Garceau[11] states that tuberculosis is frequently engrafted on polycystic kidneys. The association of stone with renal tuberculosis is occasionally encountered.

17. Stevens: California State J. M. **21**: 60 (Feb.) 1923.
18. Thomas, G. J., and Regnier, E. A.: J. Urol. **11**: 205 (March) 1924.
19. McCown, P. E.: Papillomatous Epithelioma of the Kidney Pelvis, J. A. M. A. **75**: 1191 (Oct. 30) 1920.
20. Israel, quoted by Landon, L. H., and Alter, N. M.: Ann. Surg. **75**: 605 (May) 1922.
21. Kretschmer, H. L.: J. Urol. **1**: 405 (Aug.) 1917.

Combined tumors of the kidney are interesting, but so rare that they are merely of academic interest. Graves and Templeton[22] report a papillary carcinoma of the pelvis in association with a hypernephroma, and a papilloma of the pelvis and papillary cystadenoma of the parenchyma.

GROSS HEMATURIA AS THE INITIAL SYMPTOM OF RENAL LESIONS

Sudden, very profuse renal hemorrhage unassociated with other symptoms is usually indicative of tumor. The hermorrhage may be alarming but is rarely fatal, and it is characteristic of the bleeding caused by new growths of the kidney to continue for short periods of time and to recur at irregular intervals. The passage of clots, associated in some instances with considerable colic, characterizes gross bleeding into the renal pelvis and is especially frequent in cases of hypernephroma. Interstitial hypernephroma and certain tubular carcinomas may give rise to dangerous or even fatal symptomless bleeding, and since a precise clinical diagnosis is rarely possible in these cases, an exploratory operation is frequently indicated. The kidney may present no gross abnormality, and that patient is fortunate whose excessive bleeding prompts the surgeon to remove the kidney. We look on recurrent unilateral renal bleeding of obscure origin, with gradual diminution in renal function in the presence of a normally functioning and nonbleeding kidney on the opposite side, as an indication for exploratory operation.

It is exceptional to find hematuria the sole symptom in hypernephromas when the patients come for advice. Braasch[23] states that, in 12 per cent. of cases, hematuria is the only symptom, pain or tumor or both having been added to the symptoms in the majority of cases during the period of procrastination following the initial hemorrhage. In 80 per cent. of the series

Fig. 4.—Squamous call carcinoma of the renal pelvis with closed kidney. There was a gross hematuria in this case, the source of the bleeding being a tumor implant in the lower ureter (Fig. 5).

22. Graves, R. C., and Templeton, E. R.: J. Urol. **5**: 517 (June) 1921.
23. Braasch, W. F.: Clinical Data on Malignant Renal Tumors, J. A. M. A. **60**: 274-278 (Jan. 25) 1913.

reported by Block and by Peuckert,[24] hematuria was the initial symptom of hypernephroma. Various authors mention hematuria as the initial symptom in the following proportions: Albrecht,[25] 21.4 per cent.; Garceau,[11] 34.6 per cent.; Block, 80.9 per cent.; Braasch,[23] 26 per cent.; Hinman,[16] 42 per cent. It is obvious from these figures that gross bleeding is a very frequent initial symptom of renal tumor, and equally obvious that a very small proportion of patients come to operation before other symptoms have made their appearance.

According to Thomas and Regnier,[18] 23 per cent. of patients with intrapelvic tumors come for treatment with hematuria as a sole complaint. This is because the bleeding is likely to be prolonged and rather persistent, and because other symptoms, especially tumors, are late developments. Scholl [26] states that the history of symptoms in papillomas is comparatively short, from six to twelve months, and that the hematuria is usually associated with dragging pain. In exceptional cases, symptomless intermittent hematuria may persist for years,

Fig. 5.—Tumor of the lower end of the ureter secondary to a carcinoma of the renal pelvis (Fig. 4). The tumor had ulcerated through the ureteral wall and was seen presenting in the bladder.

and intermittent hematonephrosis is not uncommon. The growth causes enlargement of the kidney in 29 per cent. of cases, according to McCown.[19]

In the vast majority of cases, renal tuberculosis first manifests itself by bladder symptoms and pyuria, but striking exceptions are seen in cases with gross hematuria as the initial symptom; this is seen in children as well as adults, and the hematuria may be unassociated with gross pyuria. Rafin [27] noted hematuria as the initial symptom in 5 per cent. of 160 cases. Lyons [28] mentions a remarkable case in which bleeding was the initial symptom, appearing first in 1908, and again after a lapse of five years. In MacKenchie's [29] patient, there had been semiannual hematuria for ten years before excessive bleeding necessitated nephrectomy.

The differential diagnosis between bleeding polycystic kidney in the absence of bilateral renal enlargement, and neoplasm, is exceedingly difficult; impossible, in fact, except by means of pyelography. The character of the hematuria in the two conditions may be identical. In one of our polycystic cases there had been five gross hemorrhages over an eight months' period, and the bleeding kidney alone was palpable.

24. Peuckert: Am. J. Urol. **2**: 119, 1905.
25. Albrecht: Verhandl. d. deutsch. Gesellsch. f. Chir. **34**: 620, 1905.
26. Scholl, A. J.: Surg., Gynec. & Obst. **38**: 186-200 (Feb.) 1924.
27. Rafin: J. d'urol. méd. et chir. **1**: 779, 1912.
28. Lyons: Colorado M. J., May, 1913.
29. MacKenchie: Surg., Gynec. & Obst. **29**: 1 (July) 1919.

TRAUMATIC INJURIES

Long continued or recurrent and intermittent hematuria may follow renal injury in the absence of operative indications; and in cases in which the medicolegal factor enters, it may be difficult to determine whether there was a preexistent lesion of the kidney which was merely aggravated by the injury. We have had several cases of this kind lately, one in which the patient had hematuria for nine weeks, following a fall down an elevator shaft; the bleeding disappeared for a time, then recurred for a period of four weeks, and finally disappeared; but the patient continued to complain of pain. This proved to be a case of chronic nephritis with chronic infection of the pelvis, the former, no doubt, antedating the renal injury. In a second case, an aged man developed right sided hematuria following a fall on the ice. The lesion in this instance proved to be traumatic dislocation of a chronically diseased kidney, and the patient died of uremia. One of our patients was admitted with left sided hematuria, which appeared one year after he had been discharged from the hospital, where he had been treated for a fracture of the spine. Our cystoscopic findings revealed bladder changes suggestive of a cord lesion, and the pyelogram was characteristic of generalized dilatation of the renal pelvis on the left side, although the function was only moderately diminished on the diseased side. Both kidneys showed a colon bacillus infection, with pyuria and hematuria on the left side. Here we had to deal with a bleeding, dilated and infected kidney, the dilatation being due, in our opinion, partly to infection and partly to cord injury, although the neurologist could find no other evidence of such injury. In a similar case without hematuria, however, there were localizing symptoms of destructive involvement of the corda equina in addition to detrusor paralysis.

An interesting instance of traumatic hematuria, also left sided, was seen in the case of a young man who was found to have an extensive pelvic fracture, one line of which crossed the left sacro-iliac joint. Ureteral obstruction was found at about the level of the line of fracture, and catheter manipulation greatly increased the bleeding; this patient was treated expectantly, and recovered.

We are pleased to be able to report one of the very rarest of renal lesions, namely, traumatic rupture of a horseshoe kidney; in fact, we know of only one other instance of such injury, in Morris' [30] case, in which the patient was kicked in the abdomen by a horse. We report herewith a second case, that of a young man who was admitted to the Methodist Hospital in a profoundly shocked state, having been crushed between two freight cars. The diagnosis of intraperitoneal hemorrhage was made, but the patient's general condition was such as to preclude operation; at necropsy it was found that the jejunum was ruptured in two places, and that the patient had a horseshoe kidney, the isthmus of which was torn completely across (Fig. 3).

CONCLUSIONS

1. Lesions primary in the upper urinary tract contribute more than 50 per cent. of hematurias.

30. Morris, Henry: Diseases of the Kidneys and Ureters, 1901, p. 162.

2. The majority of renal hematurias are microscopic.
3. At least 50 per cent. of massive hematurias are caused by tumors of the bladder.
4. The majority of renal tumors are associated with hematuria, and in at least 75 per cent. of cases they give rise to massive bleeding.
5. Massive bleeding in the presence of stone, inflammation or tuberculosis should suggest the possibility of an associated neoplasm.
6. Renal calculi situated in the parenchyma are prone to give rise to more bleeding than are smooth stones in the true pelvis.
7. Hematuria is a symptom that should be looked on as an indication for a complete urologic study, except in cases in which the underlying cause is obviously extra-urinary and the lesion nonsurgical.

THE IMPORTANCE OF HEMATURIA AS A SYMPTOM *

ARTHUR L. CHUTE, M.D.
BOSTON

Some four years ago, I looked up 100 cases that had presented hematuria as a prominent symptom. I was startled to find that, in 64 per cent. of these cases, the

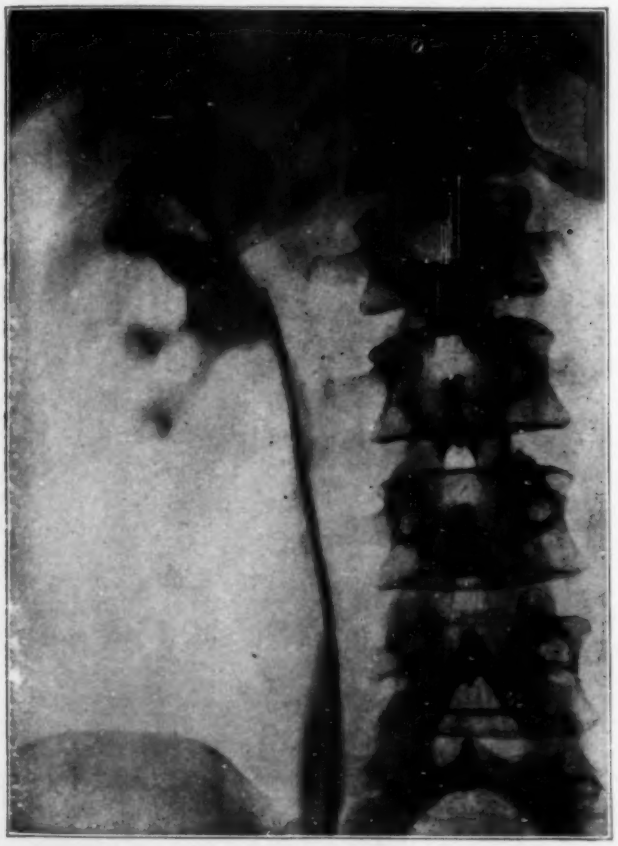


Fig. 1.—Stone in pelvis (lighter shadow) removed through cortical incision in tertipara who for five or six months had had attacks of abdominal pain every little while, with nausea and vomiting, also hematuria.

bleeding was caused by a new growth of some sort, of the prostate, of the bladder, or of a kidney. Few, I think, will care to consider a symptom unimportant that indicates so serious a type of disease in so large a proportion of cases.

For the present communication, I have gone over another series of 100 cases of hematuria to see how they compared with those reported previously: in this series, I have tried to do as I did before, that is, to take consec-

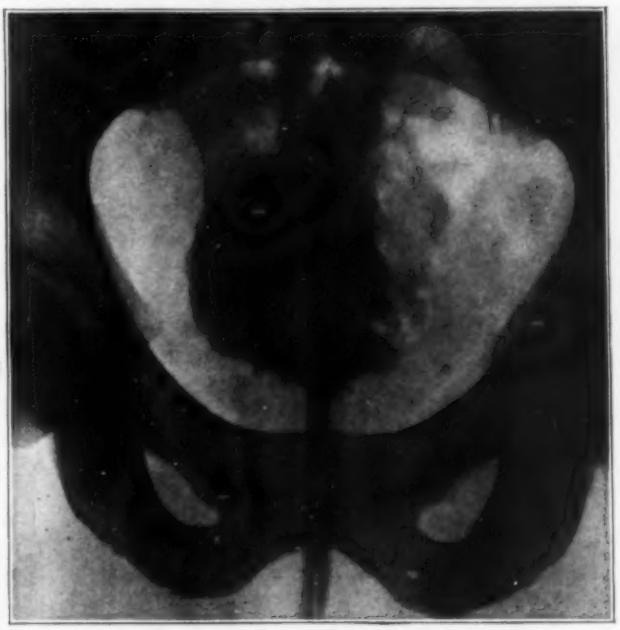


Fig. 2.—Cystogram showing deformity of the bladder on the left and great masses of papilloma subsequently removed at operation in a man, aged 38, who for four years had had pain and hematuria.

utive cases so far as I could. I have found it quite impossible to do this absolutely, since, in a certain number of patients who presented hematuria, I was unable, for one reason or another, to determine definitely the cause of their bleeding; often this was because I saw the patients only once. The hematuria, which has been "total" in this series of cases, has been due to the causes given in the accompanying tabulation.

Origin of Hematuria in One Hundred Cases

	Number
Prostatic origin:	
Adenomatous hypertrophy	9
Carcinoma	4
Abscess of prostate	1
Bladder origin:	
Infiltrating growth, adenocarcinoma type	25
Papilloma, papillary carcinoma type	10
Single papilloma	1
Stone in bladder	2
Spinal cord bladder	2
Vesico-intestinal fistula	1
Cystitis	2
Ulcer of bladder	2
Rupture of bladder	1
Ureteral origin:	
Stone in ureter	5
Dilatation of ureter	2
Renal origin:	
Stone in kidney	10
Tumor of kidney	5
Hydronephrosis	8
Congenital cystic kidney	1
Renal tuberculosis	7
Pyelonephritis	6
Ruptured kidney	1
Nephritis	2
	107
Deducting 7 cases included under 2 headings	7
Total	100

The source of the bleeding, as is evident from the table, was found to be the prostate in fourteen cases; the bladder in forty-six cases; the ureter in seven cases,

* Read before the Section on Urology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

and a kidney in forty cases; in seven patients there was a double lesion, thus accounting for 107 lesions in 100 cases.

Of the fourteen bleeding prostates, nine were of the fibro-adenomatous type, and gave no evidence of malignancy; one hematuria of prostatic origin was the result of a prostatic abscess of nonvenereal type, while the

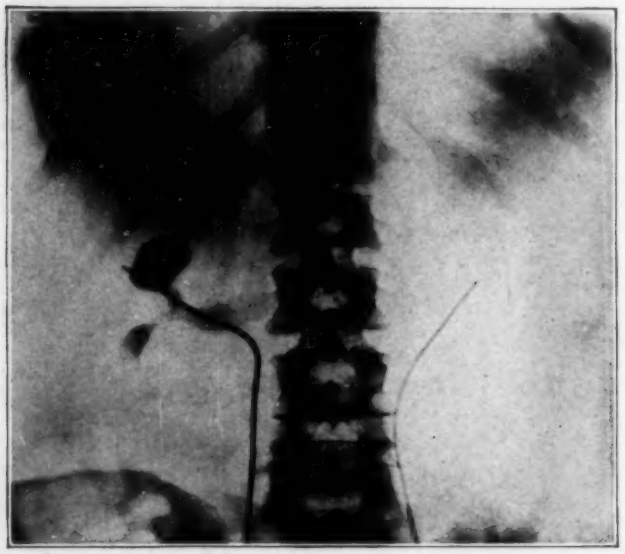


Fig. 3.—Pyelogram consistent with a diagnosis of tumor, in a woman, aged 65, who had had hematuria for the last few months, clots of late, and a mass in the right loin; at operation, a large hypernephroma was removed.

remaining four were due to malignant disease. If this very small series of prostatic cases represents a fair average, we may expect that a bleeding prostate will be carcinomatous in 30 per cent., or nearly one third of the cases.

When we turn our attention to the forty-six cases of bleeding that were found to be of bladder origin, we find an even graver condition of affairs. In twenty-five of these cases, the bleeding came from a bladder growth that was of the broad-based, infiltrating type—the type that ordinarily is found to be adenocarcinoma microscopically. In eleven other instances, the bladder growth that caused the hematuria was papillomatous in type; in ten of these eleven cases it was of that type of papilloma which is usually found by the microscope to be papillary carcinoma. In this sort of papilloma, the growth often fills a good part of the bladder, and the tendency to recur is marked; it is of low malignancy in some cases, and of high malignancy in others. Only one of these eleven papillomas was clinically of the simple or benign type, which seemed to be suitable for fulguration. The other thirty-five were actually malignant or potentially so. In other words, more than 75 per cent. of the hematurias of bladder origin were due to growths that were actually or potentially malignant. A symptom that indicates the presence of such a serious condition in so large a percentage of cases must certainly be considered important.

In the seven cases in which the hematuria was of ureteral origin, there were no instances of malignant involvement. In some of these instances, however, the hematuria did indicate a condition that was serious enough to lead to the destruction of the kidney.

In the forty cases of hematuria that were of renal origin, the incidence of malignancy was relatively small; there were but five cases of new growths, or 12 per cent.; these growths were all hypernephromas. Fortunately, these growths frequently show a tendency to bleed in a relatively early stage of the disease; this gives a warning which, if promptly heeded, often allows one to remove these growths while they are still limited to the kidney; that this is not always the case is borne out by those instances in which we find a bony metastasis the first evidence of a hypernephroma.

Though the percentage in malignant disease was relatively small in the cases presenting renal hematuria, the hematuria indicated in a number of cases the presence of other lesions that were of the utmost seriousness to the kidney: thus, seven cases presented renal tuberculosis, a lesion that means the destruction of the kidney in almost all instances; besides this there were eight instances of hydronephrosis, six of pyelonephritis, and ten of renal stone; conditions that must all be looked on as seriously menacing the integrity of the kidney involved.

Taken as a whole, we find that hematuria has in this series of cases been due to the presence of malignant disease in 44 per cent.; that in a number of other instances it has indicated a condition which, though not malignant, would probably lead to the ultimate destruction of the organ involved, and, in some instances, possibly to the loss of the life of the patient as well. In the light of what we know of hematuria, we may very properly insist that it is a symptom of the utmost importance.

It is one of the opportunities, as well as one of the duties, of the members of this section to call the attention of the medical public to the true significance of

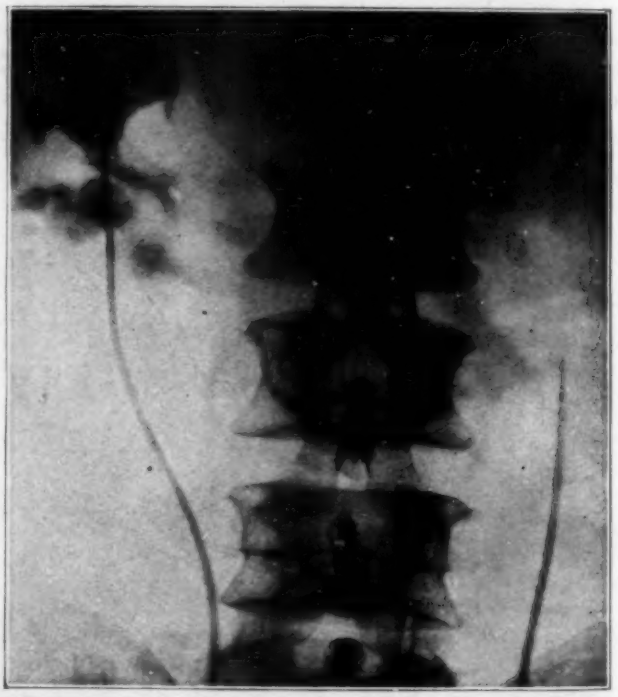


Fig. 4.—Rounded calices of right kidney in a man, aged 40, who had had hematuria and clots occasionally for four years, and the left testis removed two years before; pus and tubercle bacilli were found in the right kidney; nephrectomy was performed.

hematuria and to the importance of promptly determining the location and cause of every instance of urinary bleeding. There is still too great a tendency to temporize with hematuria, to give some drug, and then,

whenever the bleeding stops, as it almost invariably does for a time, to consider that it was of little importance and to postpone every attempt to determine accurately its cause. In a considerable proportion of patients with advanced malignant disease of the urinary tract, there has been the story of a premonitory hematuria which had occurred, in a number of instances, some years

Fig. 5.—Large hydronephrosis due to stones in the ureter (shadows at the tip of the ureteral catheter) in a man, aged 43, who had passed blood eight days before he was seen, after having had severe abdominal pain; eleven or twelve years before, an attack of similar pain had kept the patient in bed several days; no dye was excreted by the left kidney; nephrectomy was done.

before, but which had stopped spontaneously and which, therefore, had not been considered necessary to follow up. The tradition that a hematuria is often the result of a shower of crystals of calcium oxalate or of uric acid is a dangerous one, as is the tradition that it is common to have a hematuria due to varicose veins of the bladder. These instances are the rare exceptions rather than the rule. Traditions such as these die hard and are responsible for delay in dealing with many cases of urinary bleeding. In women we must be especially careful that hematuria is not confused with some menstrual irregularity. In every instance, hematuria should be looked on as a symptom of serious import, and should be investigated promptly and carefully.

352 Marlborough Street.

Irritation Not Cause of Cancer.—I am fully convinced that irritation is not an essential cause of cancer, yet there can be no doubt that repeated irritation is a potent factor in the development of the disease and more especially in determining its location. Cancer often develops without any recognizable irritation; it is certain that neither trauma nor irritation play any part in the formation of secondary growths (metastases), whatever may have been their rôle in the initiation of the primary tumor. However, it is conceivable that injury (trauma) or irritation may determine or hasten the development of a malignant growth by lowering tissue resistance and thus favor a latent cancer germ. Indeed, we know that cancer is more liable to attack disordered, involuted or chronically diseased organs than those which are normal.—L. W. Sambon: *Proc. Roy. Soc. Med.* **60**:117 (Sept.) 1924.

BENIGN FOREIGN BODY GIANT-CELL TUMORS IN THE LONG BONES*

HENRY W. MEYERDING, M.D.
ROCHESTER, MINN.

In reviewing cases of bone tumors examined at the Mayo Clinic between 1909 and 1922, I have selected a group of twenty-four benign giant-cell tumors of the long bones for presentation. All of the patients were given careful clinical and roentgenographic examinations, were operated on, and had microscopic diagnoses made. The end-results were traced in 1924, from two to fifteen years after operation.

Consideration of this group may be of value in clearing up some of the confusion that apparently still exists under the misleading terminology of giant-cell sarcoma, giant-cell sarcoma of the epulis type, and chronic hemorrhagic osteomyelitis. Formerly considered malignant, this tumor has gradually become definitely placed among the benign, and it is regarded by many surgeons and pathologists as a normal attempt at repair following traumatic and low-grade infectious processes. In the group reported here, the microscopic findings are practically uniform; there has been no metastasis; the patients are living from two to twelve years after operation; one patient has a recurrence; one was not heard from.

Lebert,[1] in 1845, was probably the first to recognize giant-cell tumors. Sir James Paget,[1] in 1854, describes them. Nélaton,[2] in 1860, and Gross[3] in 1879, wrote monographs on the subject. Bloodgood[4] has dropped the term "giant-cell sarcoma" for "giant-cell tumor," and has done much to emphasize its benign character and urge conservative treatment. Coley[5] has described a group of cases of giant-cell sarcomas in which diagnoses were made microscopically, and in which metastasis occurred. Stone and Ewing[6] carefully reviewed the subject of giant-cell tumors of bone, stressing their failure to produce metastasis; but they have recorded a case that was diagnosed microscopically as benign, and later proved fatal from pulmonary metastasis, the original structure having undergone malignant change. The occasional tumor that is at first diagnosed microscopically as benign giant-cell tumor and later metastasizes must be regarded as evidence of failure to recognize the malignant character primarily, or as a benign tumor that has undergone malignant change, or there must exist a group of giant-cell tumors, difficult to recognize microscopically, which form a borderline between benignancy and malignancy. Most surgeons and pathologists, however, consider giant-cell tumors of the long bones as benign.

ETIOLOGY

The origin of these tumors has been ascribed to trauma and inflammatory processes. The primary injury need not have been recent, but apparently may have taken place years before the observation of tumor

* From the Section on Orthopedic Surgery, Mayo Clinic.

* Read before the Section on Orthopedic Surgery at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

1. Quoted by Coley: Ann. Surg. **79**: 321 (March) 1924.
2. Nélaton, quoted by Coley: Ann. Surg. **79**: 327 (March) 1924.
3. Gross, quoted by Coley: Ann. Surg. **79**: 338 (March) 1924.
4. Bloodgood, J. C.: The Diagnosis and Treatment of Benign and Malignant Tumors of Bone, J. Radiol. **1**: 147-238 (March) 1920.
5. Coley, W. B.: Prognosis in Giant-Cell Sarcoma of the Long Bones, Based on the End-results in a Series of Fifty Cases, Ann. Surg. **79**: 321-357 (March) 561-593 (April) 1924.
6. Stone, W. S., and Ewing, J.: An Unusual Alteration in the Natural History of a Giant-Cell Tumor of Bone, Arch. Surg. **7**: 280-296 (Sept.) 1923.

formation. Coley reports that 56 per cent. of his patients had a history of trauma. In the series here reported, thirteen patients (54 per cent.) had received trauma; two had had fractures ten and five years before examination, respectively, and one was injured fifteen

Fig. 1 (Case 1).—Giant-cell tumor of the left femur, which had elsewhere been diagnosed sarcoma, and amputation advised. Treatment by curettage, cautery and radium saved the leg, and seven years later there has been no recurrence.

years before. It is difficult, however, to explain the origin of this tumor by trauma alone. The possibility of an infectious focus supplying the necessary stimulus to such formation in the traumatized area, however, seemed reasonable. Five of the twenty-four patients had had attacks of tonsillitis, three of dental infection, and one had had influenza immediately preceding the onset of symptoms. No doubt, had a more careful investigation been made for foci of infection in the mouth, a greater percentage of such foci would have been demonstrated; I would recommend a routine roentgen-ray examination of the teeth, and a search for foci of infection. In the jaws, where foci of infection so commonly exist, and where trauma is sustained during mastication, benign giant-cell tumors of the epulis type are common, and they closely resemble the giant-cell tumors of the long bones. During the same period, 1909 to 1922, sixty-five giant-cell tumors of the jaw were operated on at the Mayo Clinic; the combination of bone injury in the presence of focal infection producing a low-grade inflammatory process with granulation tissues, similar to the giant-cell tumor formation in the long bones, would appear within reason. I [7] reported nineteen cases of single and multiple types of cystic disease. I believe there is a close relationship between osteitis fibrosa cystica and benign giant-cell sarcomas. Barrie [8] has given the term "hemorrhagic osteomyelitis" to this tumor, and believes that it is the result of inflammatory stimuli, and that it is not a neoplasm. Slow-growing, multiple, giant-cell tumors occurring in various bones of the same patient without metastasis to the lungs have been observed. Similar types of tumors involving the tendon sheaths and periarticular structures of benign character are not uncommon; Broders [9] has reported seventeen cases.

7. Meyerding, H. W.: Cystic and Fibrocystic Disease of the Long Bones, Am. J. Orthop. Surg. **16**: 253-276 (Sept.), 367-382 (Oct.) 1918.

8. Barrie, G.: Hemorrhagic Osteomyelitis, J. Bone & Joint Surg. **20**: 653-671 (Oct.) 1922.

SYMPTOMS AND DIAGNOSIS

These patients seldom appear sick, and are usually employed up to the time of consultation. The pain is in the region of a joint, is usually rheumatic in character, and is sometimes severe, especially following trauma. Fracture may occur, usually impaction with hemorrhage following injury, such as may attend jumping; thus, a minor injury may lead to a roentgen-ray examination, disclosing a pathologic condition undoubtedly of long duration, of which, however, the patient has been unaware. There may or may not be limitation of joint motion, although function is usually limited, especially in the late cases. Occasionally, complaint of tenderness is made and, more rarely, crepitation and palpation may occur in a late case when the cortex has been destroyed.

These tumors are rare in childhood and in old age; the youngest patient in my series was 16 years of age, and the oldest 60 years of age; the average was 33.3 years. Males and females were equally affected. Seventeen of the twenty-four patients had had Wassermann tests, all of which were negative.

The diagnosis of benign giant-cell tumors of the long bones may be extremely simple, or practically impossible before operation and microscopic examination. Occurring at all ages, usually of slow growth and giving rise to mild pain without general symptoms, these tumors may exist for months or years before causing sufficient discomfort to bring the patient to the physician. The roentgen ray gives the most important preoperative evidence, as it allows the site, origin, extent and noninvasion of periosseous tissues to be studied. Should fracture usher in the symptoms, and malignancy be suspected, the roentgen-ray examination is again of first importance in the exclusion of pulmonary metastasis. These tumors occur in the long bones, most commonly in the lower end of the femur, at the proximal end of the tibia, and the distal ends of the radius and ulna, and they usually involve the epiphyses. Although they commonly appear as medullary growths, they occur also in the cortex or subperiosteally. The tumor itself casts

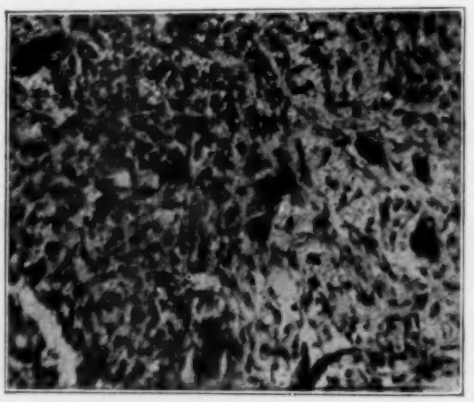


Fig. 2 (Case 1).—Giant-cell tumor of the left femur.

little or no shadow, and the trabeculated appearance is due to calcium and the irregular bone shelves projecting in, around the periphery of the tumor. Absorption

9. Broders, A. C.: Benign Xanthic Extraperiosteal Tumor of the Extremities Containing Foreign Body Giant Cells, Ann. Surg. **70**: 574-581 (Nov.) 1919.

of bone is usually equal in all directions until thinning of the cortex allows bulging; the periosteum remains intact, but is stretched out. However, in long-standing tumors, the cortex and periosteum may be perforated, and the appearance of invasion into surrounding tissue be produced in the roentgenogram. It is this ability to expand in all directions and then burst the bony shell, dissecting its way along fascia and muscle tissue, but not actually invading the tissue itself, that gives this growth roentgen-ray characteristics unlike any other benign tumor. The entire structure of bone may be replaced by tumor, and crushing, shortening and disability result. Occasionally, a tumor will involve the cortex and extend outward, apparently invading the soft tissue without extending to the opposite side of the bone, thus simulating sarcoma. The roentgen-ray examination is a most valuable aid in diagnosis, and surgical procedure depends largely on the interpretation of the roentgen-ray findings. However, it is not advisable to base the diagnosis entirely on the roentgen-ray findings, although many of the growths may be so

Fig. 3 (Case 2).—Giant-cell tumor of the left femur.

diagnosed; the opinion of the pathologist is always best. The macroscopic appearance is quite characteristic; when the bony shell is lifted, a cavity containing a brownish red, liver-like, friable tissue with variable amounts of fibrous element and vascularity is disclosed, and at times yellow areas may be seen. Curettage usually produces severe hemorrhage, and for this reason the use of a tourniquet is advisable when operating on these tumors. The microscopic appearance of these twenty-four tumors was characterized by numerous foreign body, giant-cells in a fibroblastic tissue, with engorged blood vessels, perivascular hemorrhage and the absence of tumor, giant-cells and mitotic figures; lymphocytic infiltration could be observed. The presence of foreign body giant-cells in moderate numbers in tissues does not indicate a benign tumor; they may occur in malignant as well as benign tumors.

TREATMENT

The treatment of giant-cell tumors should be as conservative as, in the judgment of the surgeon, is consistent with good, functional end-results. Not infrequently, however, destruction of bone is so extensive in the region of the joint as to warrant amputation. Formerly, as these giant-cell tumors were considered malignant, amputation was common. However, as the

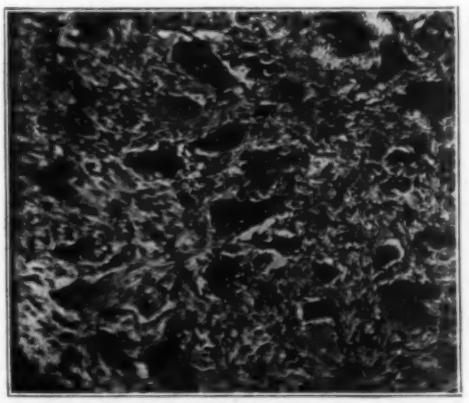


Fig. 4 (Case 2).—Giant-cell tumor of the left femur.

experience of surgeons in carefully following these cases grew, the central tumors called "sarcoma" appeared to be less malignant, and more conservative measures were advocated. As their benign character became more generally recognized, the so-called giant-cell sarcomas were classified as benign bone tumors, and excision and curettage became the common method of treatment. Unfortunately, the extensive tumors that were curetted and cauterized or treated chemically drained, with subsequent infection, which not infrequently necessitated amputation. The smaller tumors could, however, be treated successfully by conservative measures; thorough curettage and cauterization, to destroy any remaining tissue, with primary suture after the hemorrhage is controlled, would appear an ideal treatment. In certain cases, extensive involvement warrants complete excision and the application of an autogenous bone graft, the successful accomplishment of which gives complete relief with good function, and a minimal period of disability. Unfortunately, however, this method is rarely applicable in cases in which the weight-bearing bones of the lower skeleton, such as

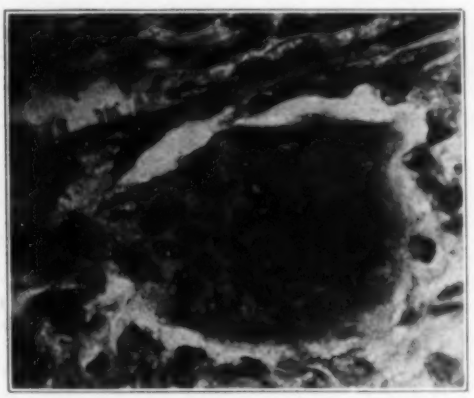


Fig. 5 (Case 2).—Giant-cell tumor with foreign body giant-cell, surrounded by fibroblasts.

the tibia and femur, are affected. My experience with radium treatment has been limited, and confined to post-operative treatment. As there has been difficulty in the early recognition of these tumors, and a difference of

opinion apparently still exists as to the microscopic interpretation, exploration and the routine microscopic examination to substantiate diagnosis has seemed desirable, and, if the tumor proved benign, thorough removal by surgical measures proved the most satisfactory method of treatment, when feasible. Radium was

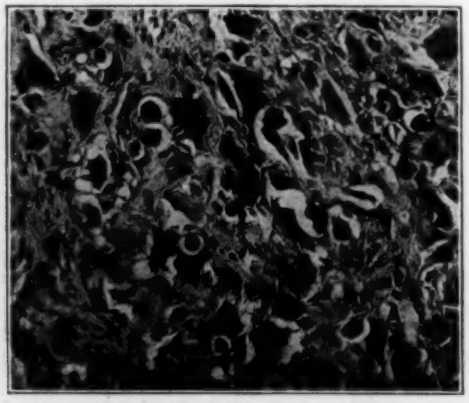


Fig. 6 (Case 3).—Giant-cell tumor.

given in three cases, and in one, ten roentgen-ray treatments were also given after curettage, cautery and radium. When one is confronted with a prolonged period of disability and questionable results, the economic condition may be such as to justify amputation and the use of an artificial limb in cases of large tumors near joints.

Of the twenty-four patients in the series, tumors occurred in the lower end of the femur in eight, in the proximal end of the tibia in seven, in the proximal end of the femur in one, in the distal end of the radius in two, in the distal end of the ulna in one, in the proximal end of the humerus in three, in the middle third of the humerus in one, and in the eighth rib in one. Of these, five had primary amputation; five amputations were also performed as secondary operations because of recurrence or infection. Nine of the ten amputations were for tumors at the knee, the other for a large tumor at the shoulder. Fifteen of the twenty-four patients were treated by primary curettage, followed by cautery or chemical sterilization. Three had the tumor excised and bone grafts inserted. One merely had the tumor excised. Three patients were given postoperative radium treatments, and one patient was given roentgen-ray treatments. One patient, with a recurring tumor that led to amputation, was first given six months' treatment with Coley's toxins. One patient writes that she has a local recurrence. No doubt, if these patients had presented themselves earlier, before extensive destruction of bone had taken place, fewer amputations would have been performed.

The prognosis in cases of benign giant-cell tumors of the long bones is good, provided the tumor is treated before extensive destruction of bone has taken place. Curettage, followed by cauterization, treatment with phenol (carbolic acid) or with zinc chlorid, appeared to be adequate surgical treatment, especially in early cases. Recurrence is prone to occur when the tumor is not completely removed. Amputation is advisable only when the tumor has grown to such proportion as to impair function permanently, when the economic situation is such as to make it imperative that the patient remain unemployed for a minimal period, or when serious infection has occurred.

Fig. 7 (Case 3). — Giant cell tumor of the right ulna.

Fig 8 (Case 3).—Result thirteen months later: firm union, good function. The graft has fractured, thrown out callus and united.

CONCLUSIONS

1. A benign giant-cell tumor of the long bones, with characteristic clinical, macroscopic and microscopic findings, has long been recognized by surgeons and pathologists. The tumor usually grows slowly and produces little clinical evidence until it is large enough to cause pressure symptoms.

2. The microscopic appearance of the tumor suggests an inflammatory origin. Trauma in the presence of focal infection may be the cause. Continued use of the term "sarcoma" in referring to this tumor is misleading, and unnecessarily alarms the patient. A sharp line of differentiation of benign and malignant types is advisable.

3. The roentgen-ray findings, although of great importance as diagnostic and surgical aids, are not always characteristic.

4. The treatment should be conservative. Curettage, followed by phenol, zinc chlorid, or the use of the actual cautery, is advisable.

5. The prognosis in these cases is good as regards life, and good functional results in the extremities may be obtained unless the destruction of bone has been too extensive. Malignancy has been observed by Coley, Stone and Ewing in tumors that were supposedly benign.

6. In the series of twenty-four consecutive cases seen at the Mayo Clinic between 1909 and 1922, in which operation was performed, and microscopic examination made, twenty-three patients have been traced, from two to fifteen years after operation, and are without evidence of metastasis.

Fig. 9 (Case 4).—Gross specimen of a giant-cell tumor of the upper tibia split longitudinally. The joint was so extensively involved in the growth that treatment by curettage was not possible. Amputation was performed in 1920; the patient is well in 1924.

7. The patients had been aware of the tumors on an average of twenty months before they presented themselves for treatment.

8. The history and the clinical, laboratory, roentgenologic, macroscopic and microscopic findings should be considered in making a diagnosis, although experienced clinicians, surgeons, roentgenologists and pathologists may often diagnose these tumors correctly from the clinical or laboratory findings alone.

ILLUSTRATIVE CASES

CASE 1.—A woman, aged 22, came to the clinic, Sept. 6, 1917, complaining of soreness and stiffness of the left knee, of five months' duration. A roentgenogram had been taken, and a diagnosis of sarcoma made; injections had been given subcutaneously, but the symptoms increased and swelling occurred. Amputation had been advised, and the patient came to the clinic in the hope of avoiding it.

At examination, the patient was found to be apparently healthy, and was able to walk. There was swelling around the distal end of the left femur and knee, restriction of motion of the knee, and soreness over the internal condyle. Urinalysis and the Wassermann reaction were negative. The roentgen-ray examination disclosed an area of destruction just above, and involving the upper portion of the internal condyle, and the condition was diagnosed by the roentgenologist as sarcoma. The tumor had apparently originated at the epiphyseal line, destroyed the cortex and invaded cancellous bone, having an irregular, hazy outline; no demarcation could be made out between the tumor and the periosseous structures, and thus the appearance of invasion was presented (Fig. 1). A roentgen-ray examination of the chest was negative for metastasis.

At operation, September 8, a soft tumor of "jamlike material" was thoroughly curetted out and the actual cautery applied. The wound was packed, and a tube drain with 50 mm. of radium was left in for twenty-four hours. The pathologist reported "giant-cell tumor" (Fig. 2). The patient left the hospital the twenty-sixth day; drainage ceased the thirty-eighth day, when she was dismissed from observation.

The patient reported, April 15, 1924. There was no recurrence, and she had had no further treatment.

This case illustrates the danger of depending on the roentgen-ray findings in the diagnosis of bone tumors, and of advising amputation without exploration. The assistance of a reliable pathologist at operation is an added safeguard, both to the patient and to the surgeon. Conservative surgery saved a functional limb.

CASE 2.—A farmer aged 30, came to the clinic, Feb. 28, 1919, complaining of pain in the left knee. Three months before, he had struck the knee. A month later, seven days after an attack of influenza, it became sore, and the soreness had increased until he had excruciating pain on slight jarring, and limitation of the joint motion.

The patient appeared poorly nourished; he was 6 feet (183 cm.) tall, and weighed 150 pounds (68 kg.). His temperature was normal; the pulse was 82; the systolic blood presure was 138, and the diastolic 80. Urinalysis and the Wassermann reaction were negative. There was a tender tumor above the internal condyle of the left femur, with engorged veins of the skin. Knee motion was restricted and painful, but motion to the extent of 100 degrees was possible. The right knee was 14 inches (35.6 cm.) in circumference, and the left, 15 inches (38.1 cm). The roentgenologist reported "area lower end left femur, rarefied and expanding periosteum, probably sarcoma" (Fig. 3). The chest showed no evidence of metastasis.

At operation, March 4, a tourniquet was applied, and a section removed for microscopic examination; the pathologist reported "giant-cell tumor" (Figs. 4 and 5). Curettage and actual cauterization were performed, and the cavity drained, the surgeon suggesting that amputation might be necessary later. In June, the patient returned for observation; he complained of pain and tenderness. In September he returned.

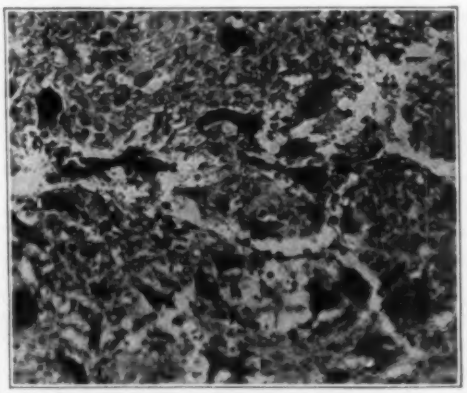


Fig. 10 (Case 4).—Giant-cell tumor of the tibia.

Twice during the preceding three months he had injured the knee, and there was recurrence with severe pain and tenderness. A roentgen-ray examination revealed extensive destruction of the lower femur; the lungs were negative for metastasis. The weight was 145 pounds (66 kg.); the temperature was 98.6; the pulse, 62; the systolic blood pressure was 152, and the diastolic 89 . The left knee measured 16 inches (40.6 cm.) in circumference, and the right, 14 inches

(35.6 cm.). The joint motion was 45 degrees, the knee was held in flexion deformity 45 degrees, and weight bearing was impossible. Amputation was performed, and the patient left the hospital the ninth day.

In April, 1924, the patient reported that he was doing farm work with the use of an artificial limb, and was well. He had had no further treatment.

This case illustrates definite trauma followed by influenza, three weeks later. Symptoms in the area of injury arose seven days after the onset of the infectious disease. The roentgen-ray and physical appearance of the patient suggested malignancy. Conservative surgery and cautery failed to remove the tumor entirely, and recurrence destroyed sufficient bone in the region of the joint so that only a thin film of cartilage remained between the tumor and the joint cavity. Amputation and an artificial limb resulted in permanent relief.

Case 3.—A housewife, aged 33, came to the clinic in June, 1920, because of a tumor of the lower end of the right ulna. Ten years before, she had been injured, and was treated for a fracture of the distal end of the right ulna, following which

Fig. 11 (Case 5).—Giant-cell tumor of the lower end of the left ulna.

a "large callus formed and caused pain for a long time." In 1908, she had an attack of tonsillitis; in 1909, tonsillectomy had been performed. The swelling over the site of the old fracture seemed to be enlarging; this caused her to come for consultation.

The patient appeared in excellent health, and weighed 192 pounds (87 kg.). The temperature, pulse and blood pressure were normal, and urinalysis was negative. There was a hard, nodular fixed tumor just above the right wrist. The right wrist measured 20 cm. and the left, 17 cm. The roentgen-ray report was "giant-cell tumor on the lower one third of right ulna, with apparent involvement of the radius."

At operation, June 6, the tumor was completely excised, a fibula graft inserted, and a cast applied. The pathologist reported "giant-cell tumor" (Fig. 6). The patient left the hospital the thirteenth day; the wound healed after the removal of stitches and the application of a new cast.

Roentgenograms were taken at intervals of three (Fig. 7), six and thirteenth months; these showed that the graft was in good position. Fracture occurred at the center of the graft between the seventh and thirteenth months, with callous formation and union; the graft united with the ulna and assumed a normal, distal, articular appearance (Fig. 8). In April, 1924, the patient was well, and there was normal function in the forearm.

The trauma occurred ten years before the patient came for treatment, and the swelling remained until the operation. Tonsillitis and tonsillectomy had preceded the injury; however, the tumor may have existed previous to injury or to tonsillitis. Watchful waiting, after ten years, seemed inadvisable as the tumor was enlarging. Treatment by excision and bone graft afforded a functional result.

Case 4.—A housewife, aged 43, came to the clinic in July, 1920, complaining of a painful right knee. A year before, she had injured the right knee, but had seemed to recover. However, six months later, the knee had begun to pain. She had had influenza in January, 1920. Following this, the pain became severe and she was unable to walk on the right leg. A cast had been applied for six months, without relief.

Examination disclosed swelling around the knee and the upper right tibia, with 80 degrees of motion, 90 degrees flexion and 170 degrees extension. Pain was constant and aching in character and, on palpation, there was tenderness and local heat. The pulse and temperature were normal, as were the urine and the blood count. The tonsils were very large and septic; the teeth were affected by pyorrhea, and there was infection at the roots. The patient had had a cholecystectomy in 1900, and a pelvic operation in 1910. The roentgen-ray report was "giant-cell tumor of the upper end of the right tibia."

The operation disclosed such extensive destruction of the upper end of the tibia (Fig. 9) that it was deemed impossible to save the knee, and amputation through the lower thigh was performed. The pathologist reported "foreign body, giant-cell tumor" (Fig. 10). The patient left the hospital the fifteenth day with the wound healed. In November, 1923, she reported that she was well, and had never had further treatment.

Case 5.—A woman, aged 30, came to the clinic in June, 1913, because of a tumor she had noticed for two years in the lower end of the left ulna. She did not remember having injured the arm. Three years before, she had had postpartum infection and gallbladder disease. The tumor caused little pain, only aching when the patient was working hard.

Examination disclosed a hard tumor of the lower end of the left ulna 5 by 2.5 cm. in diameter, with limitation of pronation and supination. There was no pain or tenderness. The urinalysis, blood count, and Wassermann reaction were negative. The roentgen-ray report was "cyst of the distal end of the left ulna."

In July, 1913, the tumor was excised and an autogenous bone graft inserted (Fig. 11). The pathologist reported "giant-cell sarcoma." The sections were reexamined in 1924 and reported "giant-cell tumor."

In May, 1924, the patient's physician sent the following report: "Operation successful in every way, patient's health good."

ABSTRACT OF DISCUSSION

Dr. D. B. Phemister, Chicago: In general, I agree with the plan of treatment outlined by Dr. Meyerding. Complete excision of the lesion without cutting into it should usually be practiced when the lesion is so situated that the bone can be cut away without producing appreciable functional disturbance, as at the upper end of the fibula or the lower end of the ulna or the rib. In some instances it is necessary to replace the missing bone by a bone graft, in others not. When the lesion is so situated that local excision cannot be practiced, it should be treated, after the application of a constrictor, by very thorough curettage followed by moderate cauterization with phenol or zinc chlorid. The constrictor should then be removed and blood should be allowed to fill the cavity, after which the soft parts are tightly sutured. Cases treated by curettage and cauterization should always receive roentgen-ray treatment subsequently, since one is never sure of removing all the diseased tissue. I have seen definite recurrences heal under roentgen-ray treatment. Excessive use of the chemical or the thermal cautery should

be guarded against, since killing a lot of bony wall predisposes to infection and fistula formation, and once a fistula is established it is difficult to obtain closure.

DR. E. W. BEASLEY, Chicago: I want to commend Dr. Meyerding for his classification, for stating that the giant cell tumors are not sarcomas and that they are probably inflammatory; for his fine distinction and the emphasis he places on the importance of the invasion of bone tumor into the soft tissues as a differentiation between the benign and the malignant growth. I should like to emphasize strongly that anything which destroys tissue predisposes to infection and sinus formation. I have amputated the last limb I shall ever amputate on any pathologic diagnosis of malignancy. Why? Because the benign cases will recover without amputation; the true sarcomas do not recover with amputation. The sarcomas reported that recovered with an amputation are giant cell tumors, endotheliomas and what not. I shall no longer amputate a limb for a bone tumor, except it be for the temporary relief of pain or for a large suppurating mass.

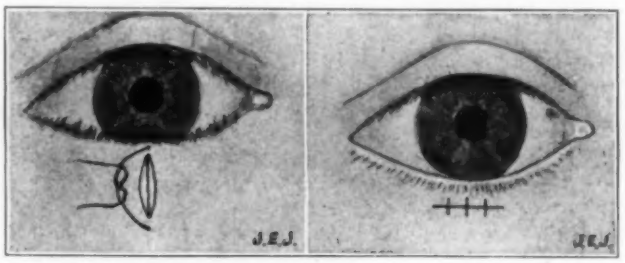
DR. HENRY W. MEYERDING, Rochester, Minn.: It should be definitely understood that the presence of foreign body giant cells in a tumor is not sufficient evidence to make a diagnosis of giant cell tumor. Such cells are found in inflammatory processes and around old sutures, as well as in malignant tumors. Two types are recognized: malignant and benign. The presence of tumor giant cells indicates malignancy, but the presence of foreign body giant cells does not always indicate benignancy. In order to rule out possible malignancy when foreign body giant cells are present but no tumor giant cells, the other cellular structures must be considered. I have shown slides of practically every case studied in order to bring out the microscopic, as well as the roentgenographic, appearance of these benign foreign body giant cell tumors. That there is a wide difference of opinion among pathologists, as mentioned by Dr. Beasley, is undoubtedly true. The surgeon must be the judge as to what should be done, confining himself to the most conservative treatment possible in order to preserve function. When benign foreign body giant cell tumors alone are under consideration, I would advise postponing amputation until conservative measures have failed to give satisfactory results. The necessity of amputation becomes obvious when a tumor has destroyed bone extensively in the region of a joint, and conservative surgery has failed as a result either of infection or recurrence, or when pain and disability make life unbearable. The use of roentgenotherapy as a postoperative procedure has been advocated by Dr. Phemister; but if roentgenotherapy prevents recurrence by destroying unremoved portions of a tumor, we may go even further and advise against exploratory operation for microscopic verification of the diagnosis, in the hope that roentgenotherapy may produce satisfactory results.

Gaucher's Disease.—In the nineteen authentic cases which have occurred in children, the diagnosis was definitely established through splenectomy in ten cases, through necropsy in seven cases, and by splenic puncture in three cases. The organs involved in Gaucher's disease are the spleen, liver, lymph nodes and bone marrow; all of which show the presence of peculiar large cells and a variable amount of iron containing pigment. The large cells are characteristic. They are usually round or oval in shape but when seen in large compressed masses may assume a polygonal outline. The average measurement is from 20-40 microns in diameter, and a cell may contain from one to four or more nuclei of relatively small size. . . . The cystoplasm stains with acid dyes and often presents a streaked and wrinkled appearance but with high magnification a granular character may be noted. Some of the cells show vacuoles, probably the result of phagocytosis. The nuclei are small, round, deeply staining or occasionally somewhat larger irregular bodies. Rarely do the nuclei show atypical mitotic changes. Whereas the cells are quite unlike any found in other pathological processes one might compare them with atypical swollen and desquamated endothelial cells.—Reuben, Mark S.: Gaucher's Disease, *Arch. Pediat.* **16**:456 (July) 1924.

SIMPLE OPERATION FOR RELIEF OF MILD TYPES OF ENTROPION AND ECTROPION OF LOWER LID*

J. E. JENNINGS, M.D.
ST. LOUIS

Among the cases of functional and organic entropion and ectropion seen by the ophthalmic surgeon, there are quite a few of such a mild type that they do not seem to justify a radical operation. Notwithstanding the irritation and annoyance they cause, these patients are often allowed to drift along with negative rather than positive treatment. For example, there is the type of entropion frequently seen in elderly people with flabby lids who develop a spasmodic contraction of the lower lid after the eye has been bandaged for a few days. The treatment that naturally suggests itself to the surgeon is to draw out the lid and fix it in position by means of flexible collodion or a strip of adhesive plaster. When these methods fail to give permanent relief, as they often do, then there are a variety of more radical operations to choose from; among these are Snellen's sutures, the actual cautery puncture of Ziegler, a linear eschar near the margin of the lid by means of a stick of caustic potash, as suggested by Theobald, cantho-



A B

Fig. 1.—Entropion operation: *A*, incision and central suture; *B*, operation completed.

plasty, and the removal of a longitudinal strip of skin from the lower lid.

Then there are numerous cases of a mild form of trachoma, which runs its course without much damage to the eye, save for a slight entropion of the lower lid with trichiasis. Perhaps there may be only a few eyelashes misdirected, but these are sufficient to cause constant irritation which may lead to ulceration of the cornea. The majority of these patients provide themselves with cilium forceps, and from time to time have some member of the family remove the offending lashes.

There are also many cases of a mild type of ectropion due to chronic conjunctivitis, to loss of tone of the lid structures (senile ectropian) and to lacrimal disease. In obstruction of the lacrimal drainage system, it is quite common to find a partial ectropion at the inner canthus of the lower lid, with thickening of the conjunctiva, due to the constant use of the handkerchief to wipe away the tears. The usual treatment for slight degrees of ectropion is astringent washes, slitting the lower canaliculus, or wearing a compress bandage.

The operation here described is designed to relieve the types of entropion and ectropion mentioned above.

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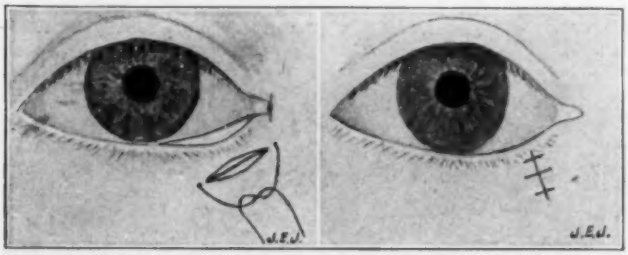
* Read before the Section on Ophthalmology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

I am informed by Dr. R. A. Woolsey of St. Louis that a similar procedure is used by abdominal surgeons to enlarge a stricture of the intestinal wall. The instruments required are a Beers knife, scissors, No. 1 catgut sutures and a needle holder. To avoid pain, a few drops of a 1 per cent. solution of procain is injected under the skin of the lid at the seat of operation. Procain acts slowly, so that to assure complete anesthesia the operation should not begin until fifteen or twenty minutes after the injection.

OPERATION FOR ENTROPION

One should first estimate how much the lid must be drawn down to eliminate the entropion and make the length of the incision just twice that amount. If the lid turns in one-fourth inch, then the incision should be one-half inch long. The incision is a vertical one, commencing just below the lid margin and extending downward one-half inch, dividing skin and superficial fascia. Without undermining the skin, a vertical suture is introduced through the skin above the upper extremity of the incision, carried down along the bottom of the wound and coming out through the skin just below the lower extremity of the incision. When this suture is



A B

Fig. 2.—Ectropion operation: *A*, incision and central suture; *B*, operation completed.

tied, the margin of the lid is drawn down, and what before was a vertical wound now becomes a horizontal one, which is closed by two more vertical sutures, one placed on each side of the central one. If the length of the incision has been estimated correctly, the lid margin will have regained its normal position and perhaps show a trace of ectropion, which will disappear in a few days.

OPERATION FOR ECTROPION

The operation for ectropion is similar to that for entropion, except that the incision is horizontal and should be made a little longer to get a decided amount of overcorrection. The horizontal incision should be placed near the lid margin under the most pendent part of the lid. When the central suture is tied, the ends of the incision are drawn together, forcing up the margin of the lid and changing the horizontal wound into a vertical one, which is closed by two more sutures, one placed on each side of the central one. As there may be considerable tension on the sutures which might cause them to tear out, they should be supported by strips of adhesive plaster until healing takes place.

I have used this operation for two years and have had uniformly good results. I do not recommend it in cases of more marked ectropion due to wounds and burns in which there is a considerable amount of scar tissue. I tried it in two cases, undermining the scar tissue; but despite the support of adhesive strips, the stitches tore out and the results were poor. The advantages of this operation in the mild types mentioned are:

1. It is simple and easy of execution.
2. The skin of the lid is not sacrificed.
3. It is not dependent for success on the formation of scar tissue.
4. The wound is clean, and heals by first intention.

807 Carleton Building.

ABSTRACT OF DISCUSSION

DR. WILLIAM H. WILDER, Chicago: We must remember that in almost all cases of entropion, whether of the spastic or the cicatricial type, there is the element of spasticity of the lid. If we take that into consideration we shall recognize the importance, in many of these cases of the severer type, of doing some form of operation by which we shall be able to remove some of the fibers of the orbicularis muscles, particularly those that run parallel with and near the margin of the lid. This discovery was made by Dr. Hartz. Those of us who have done many such cases of cicatricial entropion recognize the fact that the important step in the operation is to remove the bundles of fibers that are just beneath the skin near the margin of the lids. This technic can be accomplished easily with scissors and forceps. The same necessity for removing the bundle of fibers may have to be reckoned with in the simpler forms of entropion, the purely spastic type. I have not tried Dr. Jennings' operation, but it appeals to me on account of its simplicity; and while I would not presume to make any suggestions as to the technic, it seems to me that in cases in which this spastic element is quite prominent it might be well to separate the wound, seize these muscle fibers and dissect some of them out, particularly those near the edge of the lid. A number of operations are quite successful in these simpler types of entropion. The Ziegler puncture is a valuable procedure both in entropion and in ectropion. Or, I have found the simple excision of a piece of skin in simple, senile, plastic entropion more successful if I took away, in addition to the little strip of skin, these muscle fibers. This important feature in entropion must always be reckoned with. I feel that in the next case I have I shall want to try this procedure of Dr. Jennings, and I believe that its very simplicity will commend it. It could be done easily, of course, under local anesthesia.

DR. S. LEWIS ZIEGLER, Philadelphia: This little plastic procedure will be of value in a certain number of cases, and is therefore an addition to our resources. I have always depended on the galvanocautery puncture because of its simplicity. It is very efficient in all mild cases of ectropion and entropion, and can also be used in connection with plastic work. If the plastic procedure is not as smooth as one wishes, one can correct the rough points with galvanocautery puncture. For that reason, it has a wider field; however, Dr. Jennings' procedure has a field of usefulness, especially in old persons, who may suffer from spastic entropion after cataract extraction.

DR. JOHN GREEN, JR., St. Louis: I have tried Dr. Jennings' operation twice: on the right and left lower lids of the same patient. In one eye, there resulted a slight undercorrection, which I believe was due to the fact that I started the vertical cut a little too near the ciliary margin. In the other eye, there was a slight overcorrection. Another point: after the wound has healed there is a little pucker of skin on each side of the vertical suture. I think that the operation could be improved cosmetically by nipping out that little nipple of skin before placing the lateral sutures. It is possible that the operation might be applicable to higher degrees of entropion by adding a section of the tarsal cartilage parallel to the lid margin. Then traction on the skin sutures would effectively evert the anterior lip of the divided tarsus and hold it in this position during healing.

DR. G. C. SAVAGE, Nashville, Tenn.: I have done no other operation for entropion and ectropion for many years except the Ziegler operation. It is one of the most satisfactory

things I do, and I believe that the time will come when it will be recognized as the only procedure necessary in most cases. Of course, I am always glad to hear suggestions that may bring about the betterment of any condition, but I cannot see that anything can be added to the Ziegler operation, or anything substituted for it that would do as well. We owe a debt of gratitude to Dr. Ziegler for the original work he has done.

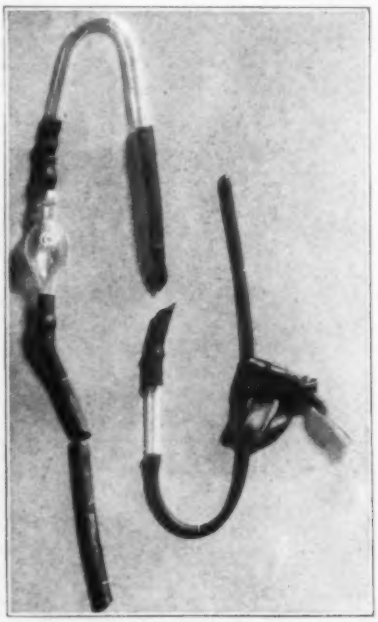
Clinical Notes, Suggestions, and New Instruments

SIMPLE DEVICE FOR BLADDER DECOMPRESSION

WILLIAM S. EHRICH, M.D., EVANSVILLE, IND.

There is no question regarding the propriety of gradual decompression in overdistended bladders, especially in those in which the distention is due to prostatic obstruction and is probably of long duration.

There have been some very serviceable devices made for this purpose, but all are more or less complicated and expensive. I therefore present this little apparatus, which, I think,



Simple device for bladder decompression.

combines serviceability, ease of construction, and low cost. In fact, it can be constructed with the materials found on an ordinary rectal drip.

An indwelling catheter is inserted and secured, and is connected with a tube about 4 or 5 feet long, so that the patient may have ample ease of movement. The end of this tube is raised and lowered until the height of the urine pressure is ascertained. This tube is then connected with a bent tube of either glass or hard rubber, which is hung over the proper hook on an irrigator pole. Near the curved tube, the drip bulb of the rectal drip apparatus is introduced into the waste tube, in order to break the siphonage that would naturally result if the entire tube were closed. The pressure is regulated by the height of the curve, which is raised or lowered by simply changing to other hooks, placed about 2 inches apart on the standard.

Apparently, the best results are obtained by placing the curved tube at the height of the column of urine for the first twelve hours, and then lowering it 2 inches every twelve hours until the bladder becomes empty. After the bladder had been emptied in this way, the catheter may be connected to the waste tube directly, or a suprapubic cystotomy may be safely done.

URETERAL SCISSORS *

HERMON C. BUMPUS, JR., M.D., ROCHESTER, MINN.

Efforts to dislodge and recover ureteral stones by the manipulation of multiple ureteral catheters, dilators or sounds have been surprisingly successful, and major surgical procedures have decreased accordingly. It is generally agreed, however, that in a certain number of cases the stone will be too large to pass, and an initial operation will be indicated. The opinion among urologists that attempts should not be made to manipulate certain stones is due to the fact that occasionally a patient develops periurethritis or pyelonephritis

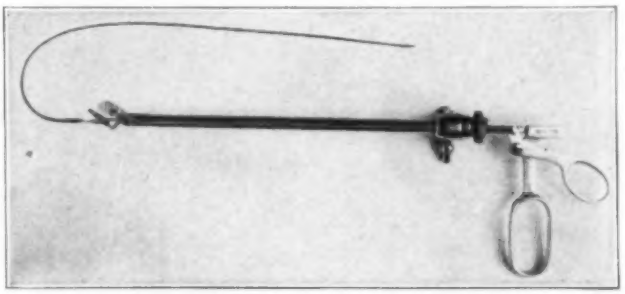


Fig. 1.—Ureteral scissors with filiform attached in cystoscope.

afterward, becomes acutely ill, and requires nephrectomy. In such a case the removal of the badly infected kidney might have been avoided if surgical measures for the removal of the ureteral stone had been undertaken at the beginning. Even with this problem solved, there still remains the problem of the type of operation to be employed for removal of the stone. If nephrectomy is not required and the unsuccessfully manipulated stone should become lodged in the wall of the bladder, as it usually does, it cannot pass through the intramural portion of the ureter, which not only is anatomically narrower than other portions, but incapable of the same amount of dilatation, either mechanical or natural.

In order to bring the larger stones through this intramural portion successfully, the ureterovesical valve must be sacrificed. Braasch has shown that this may be done without untoward after-effects. Removing stones through the cystoscope is difficult, as the usual cystoscopic scissors with a flexible shank are too frail to permit of satisfactory cutting. Caulk reported a case in which he cut the valve in the female, by passing a pair of eye scissors along the side of the cystoscope. This, of course, cannot be done in the male, and to overcome the difficulty he devised a new type of scissors which fulgurates instead of cuts. It is technically very difficult either to cut or fulgurate the upper wall of the ureter with no guide for the blades. I therefore so designed these scissors that they might be attached to a filiform which previously

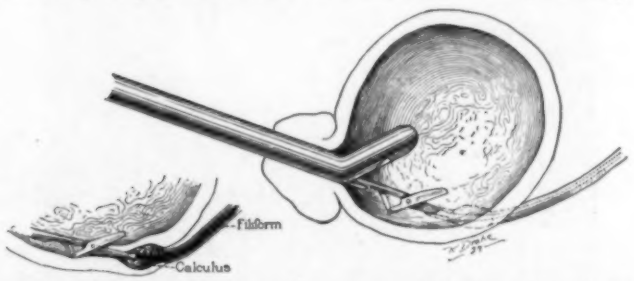


Fig. 2.—Ureteral scissors cutting ureterovesical valve with calculus lodged in the bladder wall.

had been passed up the ureter by the calculus (Fig. 1). They can be passed with the filiform as a guide with a La Forte sound, and as they are small enough to pass through a No. 12 French guide of a direct cystoscope, the cutting may be done under the guidance of the eye also (Fig. 2). They are constructed rigidly, to permit the transmission of greater force to the blade than is possible with any flexible type of scissors.

* From the Section on Urology, Mayo Clinic.

AN UNUSUAL CASE OF RHINAL MYIASIS, WITH RECOVERY

O. JASON DIXON, M.D., KANSAS CITY, MO.

A man, aged 57, was referred to me by Dr. J. F. Hassig at St. Margaret's Hospital, with a complaint of worms in the nose. When I first saw him (Fig. 1), which was seven

Fig. 1.—Appearance of patient just prior to removal of the worms: patient semiconscious; eyes swollen shut, and skin over bridge of nose ready to break down.

days after the first sensation of activity within the nose, he presented the exact picture of facial erysipelas. Over the bridge of the nose was a dark red area almost ready to break down. The nose, which was naturally quite high and

Fig. 2.—Sagging of bridge, three months after recovery, caused by destruction of cartilage by the worms; prior to this invasion, the nose was straight.

large, was swollen and a glossy red. There was a profuse lacrimation, and the eyes were swollen nearly shut. The patient was semidelirious, with a pulse of 94 and a temperature of 101.6. It was impossible to get any history from him. He said that his head hurt, pointing to his nose and forehead, and he was too weak to sit up. He had been unable to sleep for three nights on account of pain in his nose and the working of the worms. The odor from his nose was a nauseating, sickly sweet. He was breathing entirely through his mouth, and had a very active, loose cough, which brought up thick yellow pus, but no parasites.

Each anterior chamber was filled with a squirming mass of large, white, active screw-worms. Now and then, a few drops of foul smelling, blood stained secretion would ooze out. The left naris contained more necrotic tissue than the right.

With the forceps I picked out fifteen or twenty live worms, which held on tenaciously, and when one would slip off the forceps and fall into the nose (the patient lying down), he would disappear beneath his brothers with almost incredible rapidity. The least disturbance seemed to incite all the worms to burrow deeper into the tissues.

Prior to this procedure, my intern had managed to remove a half ounce (206) of these worms by this method, with no benefit to their host.

The nose bled easily and freely. The right middle turbinate was almost totally destroyed, and the mucous membrane of

Fig. 3.—A few of the screw-worms at the time of their removal; the numbered graduations on the rule are in centimeters.

the left side of the septum was eaten away over an area 3 mm. square. The worms seemed to be feeding almost entirely on the remains of the right middle turbinate, and on the left were burrowing high and into the frontal and ethmoidal sinuses.

TREATMENT

Pledgets of cotton saturated with undiluted chloroform were inserted snugly into each nasal chamber after all worms within catching distance had been removed. These pledgets were kept saturated and left in place for five minutes, with no complaint from the patient except a sweet taste.

Three worms quickly worked out into the back of the throat and were expectorated. The first was very active, but the next two were almost completely anesthetized.

After the packs were removed, all visible activity within the nose ceased, and fourteen firmly embedded dead worms were removed with the forceps. The patient said he did not feel any motion within his nose. At the time, I doubted whether I had killed all the worms with this one application,

and was certain that not all the dead worms had been removed. Owing to the patient's unfavorable condition, he was returned to bed.

The following day he was much improved. He had slept well all night, felt no activity within his nose; there was no bloody discharge—a valuable sign of live, active worms—and he was certain that all the worms had been killed. He had blown out several dead ones. The orbital edema had completely disappeared, and the nose was much less swollen.

Three days after the first application of chloroform, the nurse reported that the patient had coughed up several live worms. This was confirmed by the patient and the intern. The cough was much worse, and the sputum contained some live and some dead worms.

In their escape from the chloroform in the anterior nares, which was applied in the recumbent position while the patient was semidelirious and breathing heavily through his mouth, had these worms dropped down the trachea and into the lungs? Since their favorite abode is a dark, moist cavity with an abundance of easily obtained blood, I thought this quite plausible.

Happily, this was not the case, as another application of intranasal chloroform pledgets finished the few remaining live worms.

Dead worms were removed in toto ten days later, and except for an occasional frontal headache and a very foul odor from decomposing worms and tissue, the patient made no complaints. Both middle turbinates were completely destroyed, with the tip of the left superior. The septum quickly healed, the edema and cough subsided, and the patient is now well.

That there was considerable destruction of septal cartilage is shown by the appearance of the patient three months after the nose had completely healed (Fig. 2). There was no sagging of the bridge prior to this infection.

The question now arises, How could so many worms get into a man's nose? Was he intoxicated at the time or very unclean? Neither; he is an industrious, clean, intelligent German. His wife, who is quite bright and has a good memory, was later able to clear up the mystery.

A few days before the onset of this disturbance, she stated that her husband had had a slight nosebleed. The next day, while he was cutting some weeks with a scythe in the front yard, he thought that a bug had gotten into his nose. He was certain that he got it out, but he was sufficiently annoyed to tell his wife.

This was no doubt the screw-worm fly in search of just such a rich nest to oviposit as this man's nose presented. Both his hands were occupied, so that he did not attempt to brush the fly away until she had either deposited her eggs or was mashed during her activity, leaving many more eggs than she would have left normally. As these eggs hatch, under favorable circumstances, within from one to four hours, most of the larvae were busy by the following morning. Seven days later, all had hatched and many had voluntarily dropped out to complete their life cycle beneath the earth.

That this patient would have died within a few days, there is no doubt, as these worms easily work their way through bone, and in their search for fresh tissue would probably have entered the meninges through the cribiform plate.

917 Rialto Building.

Antiquity of Cancer.—Cancer was well known to the ancients; its history can be traced backwards to the classic period in Europe, to at least 4,000 years ago in Egypt. It is mentioned in the Papyrus Ebers, written about 1500 B. C., and in the Edwin Smith Papyrus, the oldest known work on surgery (c. 1700 B. C.). Leonidas, of Alexandria, remarked on the importance of nipple retraction as a diagnostic sign of cancer of the breast, and even nonmedical writers referred to the deadly nature of the disease. Ovid's "Utque malum late solet immedicabile cancer serpens" is an apt illustration. The ancient surgeons knew when and how to operate for cancer, using knife and cautery alternately in order to avoid hemorrhage and prevent dissemination.—L. W. Sambon: *Proc. Roy. Soc. Med.* **12**:78 (Sept.) 1924.

Special Article

GLANDULAR THERAPY

THE ADMINISTRATION OF THYROID PREPARATIONS*

HENRY S. PLUMMER, M.D.
AND
WALTER M. BOOTHBY, M.D.
ROCHESTER, MINN.

In the other articles of this series, the function of the thyroid gland and its secretion has been presented in considerable detail. The points there brought out that are of paramount importance for the proper administration of thyroid preparations may be briefly restated here. The function of the thyroid gland is to furnish a secretion, the active principle of which is thyroxin. The exact physicochemical status of thyroxin as it leaves the thyroid gland is not known. Thyroxin is a catalyst that accelerates the rate of heat formation. In the normal person the quantity of thyroxin actively present in the cells of the body is probably between 8 and 14 mg., and the concentration of a healthy normal person apparently varies very slightly; that is, the concentration in the body is constant in the sense that the temperature, the alveolar carbon dioxid tension, etc., of the normal person are constant. Thyroxin is only very slowly destroyed or eliminated; the curve of decay plotted on semilogarithmic paper is a straight line, indicating a monomolecular reaction. In myxedematous patients 14 mg. of thyroxin after intravenous injection is destroyed in from one to two months, the average time being about six weeks, and therefore it is impossible to explain a rapid rise with rapid fall in the basal metabolism, the cycle lasting only a few hours on the basis of variations in thyroid activity. Under normal conditions, the thyroid gland provides just enough thyroxin each day to meet the daily loss, which, with the metabolism at the normal level, may be estimated at approximately 0.3 to 0.7 mg. daily.

Owing to disturbed function of the thyroid gland there may be either an increase or a decrease in the amount of thyroxin actively present in the cells of the body; that is, there may be hyperthyroidism or hypothyroidism, with a series of clinical symptoms characteristic of each condition and quantitatively measurable by a determination of the basal metabolic rate, provided there are no other factors present to shift it from normal. Theorectically, it can be assumed that in certain conditions the chemical configuration of the thyroxin molecule may be somewhat abnormal; at present there is no substantial evidence to support the contention that the thyroxin molecule is abnormal in any other condition than in exophthalmic goiter.

From the foregoing it follows that the aim in giving thyroid preparations is to elevate the basal metabolic rate and thereby relieve the patient of those symptoms that develop as a result of too slow a rate of combustion due to an insufficiency of the catalyst thyroxin. Therefore it is advisable, whenever possible, to determine the level of the metabolism before treatment is instituted, and to follow and regulate the treatment by repeated determinations of the basal metabolism. Unfortunately, it is not always possible to have basal

* This is the fifth of a series of articles prepared under the auspices of the Council on Pharmacy and Chemistry. When completed, the series will be published in pamphlet form.

metabolism determinations, and the patients must at times be treated without its aid. The best results under the latter circumstances will be obtained by an attempt to estimate whether or not the metabolism is too low, normal or too high by considerations of the pulse rate, pulse pressure, food intake in relation to amount of work done and to gain or loss in weight, feeling of warmth, evidence of perspiration, appearance or disappearance of the edema characteristic of myxedema, slowness or rapidity of movements, of expression and of thought, and other symptoms of a like nature. The estimation of the level of the basal metabolic rate by a consideration of the symptoms characteristic of an abnormal rate of heat production is similar in method to an attempted estimation of a patients's temperature when no thermometer is available for its accurate determination. Space, however, prevents an extensive discussion of the innumerable clinical points in detail; in consequence, to make our meaning clear, we are forced to refer mainly to the basal metabolic rate.

The chief value of the active principle of the thyroid gland in clinical medicine lies in the treatment of true myxedema and cretinism, because these diseases are due to the inability of the thyroid gland to form sufficient thyroxin to maintain the concentration of thyroxin in the tissues at the normal level. Both myxedema and cretinism are definite and characteristic and, as a rule, readily recognizable clinical entities due to the inability of the thyroid gland to form thyroxin in response to the demands of the tissues. In spite of the typical picture of true myxedema, the condition is often overlooked. With certain reservations, which cannot be presented here, a decrease in the basal metabolic rate is, in general, evidence that the concentration of thyroxin in the cells of the body is decreased. A low rate, however, does not necessarily mean that the thyroid is unable to make thyroxin, but may indicate that the mechanism for regulating the quantity of thyroid secretion is not functioning correctly. That such a mechanism exists can hardly be doubted; at present, however, we have no knowledge of its exact nature or how to influence it. The suggestion for making basal metabolic rate determinations must come from the acumen of the clinician in recognizing various clinical phenomena that are indications of a low metabolism. A low metabolism having been determined by laboratory methods, a differential diagnosis between hypothyroid states and nonhypothyroid states associated with a low metabolism and an opinion as to the chance of benefiting these by an elevation of the metabolism rests not on the metabolic data, but on the familiarity of the clinician with the conditions in which a low metabolism has been found. However, these questions cannot be taken up in detail in this article, as an authoritative discussion of thyroid medication in this paper must be limited almost entirely to its use in the treatment of myxedema and cretinism.

In myxedema, the plan of treatment consists, first, in bringing by appropriate doses the amount of available thyroxin in the tissues up to the normal concentration by one or two large doses and, secondly, in maintaining this level artificially by the daily administration of the appropriate dose. To illustrate: After several determinations of the basal metabolic rate, which in completely myxedematous patients presenting the characteristic clinical syndrome varies between —30 and —40 per cent., the patient may be given by mouth a dose of desiccated thyroid equivalent to 5 or 10 mg. of thyroxin (usually from 2 to 4 gm. of desiccated thyroid). A delayed period of about twelve hours elapses before there are any subjective symptoms or elevation in metabolism. After this latent period, a definite reaction is produced characterized by headache, loss of appetite, nausea and occasionally vomiting, and pain in the back, legs and joints, with increase in pulse and metabolism; the temperature, which was formerly slightly subnormal, comes to normal or is perhaps 1 degree Fahrenheit above normal for a few days, accompanied by sensation of warmth and a moist skin. The subjective symptoms are most marked, as a rule, on the second day; the height of the metabolic curve is reached between the third and the tenth day. The reaction seems to be due in large part to the sudden alteration in the basal metabolic rate, with the simultaneous decrease of the edema and mobilization of nitrogenous substances probably present in the edema. The loss of weight is due both to the elimination of the edema and to the loss of appetite. Objectively, on the second or third day there is a definite change in the appearance of the patient. With the clearing up of the edema, the face becomes more expressive and the speech is faster and more distinct. The skin becomes moist and the scales commence to shed. It is advisable to forewarn the patients of this general reaction and to assure them that it is not serious although it may be very uncomfortable. Most of the discomfort is over in one or two weeks; in old, long standing cases, it may be several months before the patient feels normal. If there is a complicating nephritis, as indicated by a slightly elevated blood urea or low elimination of phenolsulphonephthalein, the elevation of the metabolism should be brought about more slowly by the use of smaller doses in order to allow time for the somewhat slowed elimination of the nitrogenous substances that are mobilized and thrown into the circulation. Sometimes the blood urea may rise from 40 to 80 mg. per 100 c.c. if the water content of the edema is eliminated at a much faster rate than its nitrogenous content.

The peak in the rise of the basal metabolic rate curve as a result of the original single dose is reached between the third and the tenth day. If the metabolism is found to have come from its original level half way to normal as a result of the first dose, a second dose of similar size should be given about the sixth or the seventh day; if, however, the metabolism has come three fourths of the way to normal, a dose half the size of the original will be sufficient. Sometimes a third similar dose may be needed to bring the patient's metabolism to normal. The subjective reactions produced by the second and third doses are less marked, as a rule, than those produced by the first dose. The blood urea should be followed carefully during the period in which the edema is disappearing and the frequency and size of the dose governed accordingly. By the end of the second week, the patient should have a normal basal metabolic rate, and the curve from daily observations should be trending downward. At this time the daily dose should be started. Experience has shown that, as a rule, 1 or 2 grains (0.065 or 0.13 gm.) of desiccated thyroid, equivalent to 1.6 mg. of thyroxin by mouth, is usually the correct daily dose. By frequent determination of the basal metabolic rate, it can be readily shown whether or not the daily dose is correct. If there is a progressive increase in the metabolism, the dose should be decreased; on the other hand, the quantity given must be sufficient to hold the rate up to normal.

On account of the delayed and long continued action of thyroxin, slight alterations in the dose produce no immediate or pronounced effect on the basal metabolic rate, so that after increasing the dose from 1½ grains (0.1 gm.) daily to 2 grains (0.13 gm.) daily of desiccated thyroid, no definite change in the level of the metabolism will be demonstrable for about a week. In altering the dose, an attempt to forecast the effect of the change the next week should always be made, and frequent large changes in the dose should be avoided. After the correct dosage for that patient and for the particular thyroid preparation used has been accurately established, it is rarely necessary to alter the size of the daily dose. The thyroid medication in myxedema or cretinism must be continued daily, however, throughout life, regardless of circumstances, such as an intercurrent and independent illness, acute or chronic.

The advantage of the one or two large initial doses, as described above, lies in the fact that the period of reaction with its attendant discomfort is more quickly passed and the patient's time is conserved. However, the same result can be accomplished a little less quickly, but also possibly with a less severe although more prolonged reaction, by giving during the first two weeks a daily dose of from 3 to 4 grains (0.2 to 0.26 gm.) of desiccated thyroid, which is twice the amount usually found necessary to maintain the metabolism after it has been brought to normal. As soon as the metabolism is normal, as estimated by a study of the clinical symptoms if it is impossible to obtain a metabolism determination, the daily dose should be reduced to that necessary to replace the daily destruction of thyroxin in the body, which, as pointed out above, is usually about 1 to 2 grains (0.065 to 0.13 gm.) of desiccated thyroid daily. As will be seen, the old custom so generally recommended in textbooks of giving at first small and then increasingly larger doses of thyroid for from three to four weeks and then stopping administration because the patient is obviously markedly hyperthyroid is fundamentally wrong not only in principle but also in practice.

There are some conditions other than myxedema or cretinism in which it may be desirable to elevate the basal metabolic rate by the administration of desiccated thyroid for short periods above that customary for the individual patient and sometimes even above the average normal. One such is the diffuse colloid goiter of adolescence. Other conditions may be the nonhypothyroid states previously referred to with low basal metabolic rates, which are represented by such groups of cases as anorexia nervosa, certain conditions that appear of primary pituitary origin, and other even less well defined groups. Thyroid administration under careful supervision and control is sometimes a valuable aid in weight reduction in very fat patients; the use of thyroid for weight reduction is, however, not a procedure to be recommended unless the effect can be carefully followed by basal metabolic rate determinations or by one conversant with the clinical symptoms of overdosage. In nonmyxedematous persons, the size of the dose necessary to produce a given elevation in the metabolism varies within wider limits than is the case in patients with true myxedema; in many instances this variation is apparently due to an incomplete absorption of the drug from the gastro-intestinal tract. Unless the basal metabolic rate is increased above that determined before the administration of the thyroid preparation, it can be safely assumed in the vast majority of the cases that no effect at all has been produced.

We have used desiccated thyroid and the impure sodium salt of thyroxin for oral administration. Two grains of desiccated thyroid is in most cases equivalent to 1.6 mg. of the impure sodium salt of thyroxin given by mouth. Desiccated thyroid has been found to be absorbed from the gastro-intestinal tract with greater regularity than has the impure sodium salt of thyroxin if the effects are judged by comparison with intravenous doses of pure thyroxin. In fact the absorption of the impure salt of thyroxin in persons with low basal metabolic rates which we do not attribute to myxedema is very erratic. At present we prefer for oral administration desiccated thyroid standardized on its iodin content. We only rarely administer thyroid in combination with other ductless gland products and then only on very definite and clear cut conditions. The indiscriminate use of mixtures without definite indications is to be condemned. Whatever benefit such mixtures have had in the past can probably be attributed to the thyroid contained therein.

On account of the difficulty of obtaining accurate basal metabolic rate determinations, as well as the uncertainty of the standards in infants and children, the exact daily dose of thyroxin or desiccated thyroid is not well established from this point of view in these young patients. It appears, however, that they require relatively larger doses than would be estimated on the comparative basis of weight. It has been necessary to judge the dosage on such clinical observations as growth, weight and circulatory phenomena. The average cretin under 5 years of age has seemed to do best on a dose of from one-half to 1 grain (0.033 to 0.065 gm.) of desiccated thyroid daily.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

STAPHYLOCOCCUS VACCINE (See New and Nonofficial Remedies, 1924, p. 323).

Lederle Antitoxin Laboratories, New York.

Staphylococcus Vaccine, Polyvalent.—(See New and Nonofficial Remedies, 1924, p. 324.) Also marketed in packages of one 5 Cc. vial containing 800 million killed *staphylococcus albus*, 800 million killed *staphylococcus aureus* and 400 million killed *staphylococcus citreus* per cubic centimeter; in packages of one 10 Cc. vial containing 800 million killed *staphylococcus albus*, 800 million killed *staphylococcus aureus* and 400 million killed *staphylococcus citreus* per cubic centimeter.

PNEUMOCOCCUS VACCINE (See New and Nonofficial Remedies, 1924, p. 322).

Lederle Antitoxin Laboratories, New York.

Pneumococcus Vaccine, Polyvalent.—(See New and Nonofficial Remedies, 1924, p. 322.) Also marketed in packages of one 5 Cc. vial containing 3,000 million killed pneumococci per cubic centimeter.

TYPHOID VACCINE (See New and Nonofficial Remedies, 1924, p. 326).

Lederle Antitoxin Laboratories, New York.

Typhoid Vaccine (for Prophylactic Treatment).—(See New and Nonofficial Remedies, 1924, p. 328.) Also marketed in packages of 30 vials; in packages of one 5 Cc. vial containing 1,000 million killed typhoid bacilli per cubic centimeter; in packages of one 20 Cc. vial containing 1,000 million killed typhoid bacilli per cubic centimeter.

Typhoid Combined Vaccine Prophylactic.—(See New and Nonofficial Remedies, 1924, p. 328.) Also marketed in packages of 30 vials; in packages of one 5 Cc. vial containing 1,000 million killed typhoid bacilli, 750 million killed paratyphoid bacilli A and 750 million killed paratyphoid bacilli B per cubic centimeter; in packages of one 20 Cc. vial containing 1,000 million killed typhoid bacilli, 750 million killed paratyphoid bacilli A and 750 million killed paratyphoid bacilli B per cubic centimeter.

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SATURDAY, OCTOBER 25, 1924

THE SURGICAL TREATMENT OF ANGINA PECTORIS

Recently, THE JOURNAL commented on the views expressed by Wenckebach relative to the surgical treatment of angina pectoris. It is interesting, therefore, to find no less an authority on diseases of the heart than Sir James Mackenzie[1] commenting with his usual clarity on the significant features of this invasion, by surgeons, of what has heretofore been considered wholly a medical condition. He opens his critique with a brief comment as to what actually constitutes progress in surgery:

> The impression has got abroad that the feats of the surgeon are indications of the progress of medicine. When operations are carried out with a full knowledge of the morbid conditions which it is intended to relieve, and with a knowledge of the functions of the structures which the surgeon cuts in his operation, there might be some reason for regarding such surgery as an example of the progress of medicine; but when the surgeon is profoundly ignorant of the morbid condition for which he operates, and of the functions of the structures which he mutilates, it is impossible to conceive anything more detrimental to progress. At one time the surgeon was supposed to have a knowledge which would enable him to make not only a diagnosis but a prognosis, so that he could tell whether his interference would be to the patient's benefit. But the trend of modern medicine with its specialism is, that the surgeon dispenses with this kind of knowledge and relies upon others for instructions when to operate.

With this introduction, Mackenzie considers the present excursion of the surgeon into the treatment of angina pectoris. He realizes that our knowledge of the functions of both the vagus and the sympathetic are still relatively imperfect, and he points out that it is a reflection on the state of medicine that such a universal symptom as pain should be so little understood. This fact is particularly important in relation to angina pectoris.

Analyzing the records of more than 2,000 patients who suffered from heart pain, Mackenzie found that in 1,000 the histories were so incomplete as to be of little value; in the remaining thousand, the future course of the health of the patients was recorded with precision. In a certain proportion of this thousand, the pains were not associated with any actual disease of the heart. In such patients, after the nervous condition passed that seemed to be responsible for the heart pains, the patients made complete recoveries. Not one such patient died later from a disease of the heart. In the larger group, the pains in the heart were associated with definite morbid changes, including changes in the coronary arteries and in the muscle of the left ventricle. There was a narrowing of the lumen of some part of the coronary artery, so that the supply of blood to the muscle was diminished, impairing its functional efficiency and leading to degeneration and destructive changes.

Sir James Mackenzie feels, as was expressed in previous comments on this subject in THE JOURNAL, that the pain in angina pectoris must serve definitely as a warning signal. All that the surgeon can hope to do is to cut the nerves that carry the sensation of pain, and the functions of these nerves are not yet completely understood. The surgeon cannot repair the degenerated and worn out heart muscle, nor can he affect the life and growth of the blood vessels whose functions are limited by disease. It is a frequent observation that the first sign of heart pain is the result of an unusual effort to which the heart cannot respond capably. The pain itself is not dangerous to life, but the effort leading to the pain certainly is. "To remove this valuable indicator in the present state of our knowledge is to my mind," says Sir James Mackenzie, "extremely hazardous and bad practice."

1. Mackenzie, James: A Critique of the Surgical Treatment of Angina Pectoris, Lancet 2: 695 (Oct. 4) 1924.

THE LIVER AND UREA FORMATION

For the student of medicine, few substances associated with the living body transcend urea in their biochemical interest. More than a century and a half has elapsed since this nitrogenous compound was discovered as a constituent of the urine; and the year just passed witnessed the centennial anniversary of Prevost and Dumas' isolation of urea from the blood. Meanwhile, the significance of urea as the preponderating end-product of the metabolism of proteins in the organism has become universally recognized; and the quantitative estimation of the substance has become a routine procedure in many clinical as well as physiologic laboratories. In view of the fact that the chemical structure of urea has been recognized since the early days of modern organic chemistry, it seems surprising that the details of the genesis of this relatively simple catabolite should still remain shrouded in uncertainty, if not mystery. Surely there can be little that is more fundamental in physiologic chemistry than knowledge of the history of the chemical transformations that our foodstuffs undergo in the body; and the elaboration of the nitrogenous waste in the final steps preparatory to its elimination is unquestionably an important part of the story.

One reason for the prevailing confusion lies in the circumstance that the site of the transformations leading to urea formation is still debated. For a variety of reasons, the liver has long enjoyed an exceptional position of repute in connection with the metabolic change under discussion. But urea is widespread and easily diffused throughout the tissues and fluids, so that probably all bodily secretions contain it in amounts comparable to that in the blood. This ubiquity of the substance makes the discovery of the seat of its production increasingly complicated. Although it has long been asserted that the liver, partly because of its peculiar relations to the portal circulation and its comparatively large size, is responsible for various biochemical transformations in the body, not all the assertions have been substantiated. It has been demonstrated that other tissues share with the hepatic cells the potency of producing the bile pigment bilirubin.[1] It would not be difficult to cite investigators of repute who maintain that the liver has no special function in the formation of urea, but that the latter is formed by all the tissues.

The development of a successful experimental operation for the removal of the liver so that the animals will survive a sufficiently long period to permit studies of their metabolism has made it possible to ascertain the relation of this organ to the genesis of urea. Bollman, Mann and Magath[2] of the Mayo Foundation have investigated many hepatectomized dogs in which the results have not been complicated by anesthesia or loss of large amounts of blood while the observations proceeded. As evidence that the production of urea is entirely dependent on the presence of the liver, they cite their observation that urea formation ceases completely as soon as the organ is removed. They state that in every case in which urine was secreted there was a marked decrease in the amount of urea in the blood and tissues, and also a progressive decrease in the urea content of the urine. If the animals were anuric or if both kidneys were removed, the level of urea in the blood and tissues remained constantly the same as at the time of the hepatectomy; it did not increase. This was true whether the urea content of the blood was high, as in cases of removal of the liver some hours after nephrectomy, or normal, as in cases of simultaneous removal of liver and kidneys, or the urea content was low, as in animals that became anuric some time after the liver was removed and when the urea content of the body had become depleted by excretion of the substance in the urine.

These investigators have not overlooked the criticism that, with the extirpation of the liver, much of the normally available precursor substance for the formation of urea may be mechanically removed. In other words, removal of the liver reduces the animal to a low level of nitrogenous metabolism, comparable perhaps to that of a starving individual. That this will not explain the reduction in the urea is evident from the fact that the amino-acids (which one would expect to experience conversion to urea) increase in the blood and urine after hepatectomy; and, furthermore, the augmentation of the amino-acid content of the blood by injection of the protein cleavage products did not lead to increments of urea when the liver was missing. Thus, the hepatic cells are given a specific rôle in relation to urea. In four years, chemists throughout the world will celebrate the centenary of Wöhler's classic synthesis of urea—the first compound of biologic origin to be duplicated synthetically in the laboratory without the intervention of "vital" processes. May we not hope that the celebration will be enriched by a more complete understanding of how urea is synthesized by Nature —in the liver?

1. Formation of Bile Pigment Without the Liver, editorial, J. A. M. A. **83**: 534 (Aug. 16) 1923.
2. Bollman, J. L.; Mann, F. C., and Magath, T. B.: Strides in the Physiology of the Liver, VIII, The Effect of Total Removal of the Liver on Urea Formation, Am. J. Physiol. **69**: 371 (July) 1924.

THE SPIRIT OF APPRENTICESHIP IN MEDICINE

There was a time when practitioners of the learned professions secured much of their training through service in an apprentice system. It was not the medical school so much as the physician mentor that afforded the most beneficent instruction and became the guide and counselor to the prospective student of medicine. Through his preceptor, the latter came into actual contact with the details of medical practice, in most parts of the United States, until little more than half a century ago. Until then, the contribution of the schools was confined largely to routine didactic lecturing, often based, to quote Garrison, "upon fantastic theories emanating from the teacher's brain." Presently, practical work was instituted in specially arranged laboratories, where the modern teaching of medicine as a science was ushered in. Today, clinical teaching has become organized on the basis of direct student contact with patients in the hospital, where practical instruction is confined almost entirely to the wards.

The advantages of such bedside contacts with disease are so manifold and emphatic that it is no longer necessary to stress them even to the lay public. The internship in the hospital has even come to be recognized as representing an opportunity of inestimable advantage in the training of the future physician. It has at length come to pass that, in a country once ridiculed for the laxity of its medical schools, the average beginning practitioner probably has more experience in the practical aspects of his profession and is more highly trained than the average in any other country. As this is due to his internship in a place where he sees those features that hospitals specifically afford, it happens, as Edsall[1] has lately pointed out,

1. Edsall, D. L.: The Product of Medical Education, Boston M. & S. J. **191**: 283 (Aug. 14) 1924.

that the future physician, in relation to his future, has had a somewhat unnaturally distributed experience. It will have been usually large in serious disease, a good deal of it in what is really advanced or terminal chronic disease. He will have seen much less of acute and chronic undefined disorders or of mild acute disease or of the earlier stages of chronic disease. We are reminded, indeed, that certain highly important diseases—tuberculosis, for example—are of course now unusual in hospital wards; more important than this, but less dwelt on, is the fact that hospital wards have become increasingly places for serious acute disease and for the diagnosis and treatment of grave or obscure and difficult chronic disease.

However important a thorough acquaintance with such conditions may be for the practitioner—and none will gainsay it—the undefined and the mild conditions, early chronic disease, and the like, will constitute his chief work always, and especially in his early practice. They are the most difficult of all in which to achieve real skill. It was with such milder forms of ailment that the apprentice of the older days was brought into more intimate familiarity through his personal contacts. How to secure an earlier appreciation of the less obvious or less immediately dangerous maladies should become of concern to those responsible for present-day medical education. Edsall believes that it might be accomplished through greater use of outpatient departments with both students and interns. In the hospital, chiefs, assistants and interns do conjointly even the technically medical things in examination and treatment that the practitioner does entire. In a hospital, specialists take over much of the serious judgment and action in diagnosis and treatment. Furthermore, imperative things of highly concrete character necessarily dominate the hospital situation. Intimate social, psychologic or financial domestic situations fade into the background there, even with the patient. They are, indeed, in many details impossible of elicitation in the hospital. Also, continued and seasoned knowledge of the individual patient and his family scarcely occurs there. But though in themselves and in their influence often not very concrete, and not very immediate in their imperativeness, these, as Edsall rightly contends, constitute a large share of the essential things with which the practitioner deals in the management and the prevention of disordered health and actual disease.

From contact with outpatients to home visiting and social service is only a small step in the extension of familiarity with the less acute aspects of health derangement; it represents "a touch of the apprentice system penetrating into the intern experience." Should the idea become popular and worthy of extended application, it will become imperative to reorganize the outpatient departments of most hospitals on a more satisfactory basis. Again we find Edsall's advice highly important when he insists that, if such work is to be well done, the senior men must to some extent go back into the outpatient department and take some active part in it and its guidance. It is equally important that outpatient departments be so managed that the work is not the mere routine of handling the sick. Opportunities must be developed for careful and contributory study of disease there. Not only will this aid in the improvement of the young practitioners, but, as Edsall adds, it will also aid greatly in very desirable studies of early disease and in real service to the patients. This may involve a restriction of the number of patients seen in the outpatient department to the number that can be carefully studied by the staff available, just as is done in the wards.

VENOUS PRESSURE

Thanks to a greatly simplified technic, the measurement of arterial blood pressure has acquired widespread clinical application in recent years. Knowledge regarding venous pressures also may be expected to promote a better understanding of certain quite different features of the circulation. Methods for estimating venous pressure in man have by no means been unknown; but, partly because they were cumbersome and required some technical skill, they failed to attract the attention of physicians. The apparent indifference toward the subject was doubtless augmented by the fact that there has been considerable uncertainty regarding the factors that really affect venous blood pressure. It has been assumed, for example, that changes in vascular tonus sufficient to vary markedly the amount of blood in the peripheral veins might notably alter the venous pressure; but Hooker has demonstrated that the latter is normally independent of peripheral arteriole resistance. This has been confirmed more recently by Eyster and Middleton [1] of the University of Wisconsin, who agree, further, that in normal persons under conditions of rest in bed the venous pressure in a peripheral vein rarely rises above 11 cm. of water. Figures higher than this may therefore have clinical significance. They should not be confused, however, with the increased venous pressure due to exercise; for this may readily afford figures equal to twice the normal values at rest.

According to these investigations, venous pressure is a measure of the initial pressure in the right side of the heart; it depends primarily on cardiac behavior, and is an indication of it. Eyster and Middleton's studies lead them to conclude that, excluding local causes of venous obstruction, abnormal venous pressures invariably mean cardiac failure, independent of the cause of the latter or the associated disease. Venous pressure therefore affords an indication of cardiac decompensation. The urine output in relation to fluid intake varies approximately inversely as the venous pressure. In cardiac cases with decompensation, marked changes in venous pressure have been found to be accompanied by corre-

1. Eyster, J. A. E., and Middleton, W. S.: Clinical Studies on the Venous Pressure, Arch. Int. Med. 34: 228 (Aug.) 1924.

sponding changes in the volume of the heart, as determined by roentgen-ray methods yielding teleroentgenograms. Observations at Wisconsin have shown that in acute rheumatic fever there may be normal venous pressures in the presence of extensive changes in the peripheral circulation and the clinical development of valvular lesions. This shows anew that changes in venous pressure must be due much more to retrograde influences from the heart than to alterations in peripheral resistance; and it is in harmony with the well known fact that, in rheumatic fever, cardiac failure rarely if ever supervenes in the acute phase.

Quite different is the situation in lobar pneumonia, in which cardiac failure is a familiar experience. In cardiac decompensation, changes in the venous pressure usually definitely precede alterations in the fluid equilibrium of the body and the general clinical condition. Consequently, Eyster and Middleton believe that routine determinations of the venous pressure in cardiac decompensation and pneumonia offer a valuable aid in following the course of the conditions and as a guide to rational therapy. Under some circumstances, the proportionate volume of blood in the veins is increased even though the total blood volume remains unchanged. A larger load may be placed on the heart than it can successfully cope with. If it is reduced by withdrawal of blood to a point at which the cardiac muscle can satisfactorily respond, improvement often sets in. As Eyster and Middleton express it, the heart is put into a position in which the initial load, namely, the venous pressure, is within the physiologic limit of response of the muscle. The "vicious circle" of cardiac decompensation is broken, and a return made toward normal circulatory conditions. For this reason, they believe that the rational basis for venesection in cardiac decompensation is a high and rising venous pressure. They add that this therapeutic procedure is consequently a most important one, too often delayed until the cardiac muscle is no longer able to respond favorably to a decrease of its initial load. In view of such aspects of the subject, the estimation of venous pressure deserves greater attention than is being accorded to it.

Current Comment

IDEAL WEATHER

Human comfort, so far as it is determined or modified by atmospheric or climatic environment, depends on a greater number of factors than is generally supposed. Our customs and activities are frequently altered to meet the respective conditions that arise. Muscular work, clothing, movement, artificial heating or cooling and ventilation may be concerned with the physiologic well being of man so far as this is modified by his atmospheric surroundings. Nearly a century has elapsed since Heberden [1] pointed out that the ordinary mercury thermometer is a very inadequate instrument for measuring the physiologic effects of atmospheric conditions. It merely accounts for that part of the body heat lost by radiation and convection, whereas a great part of the body heat resulting from metabolic processes is eliminated by evaporation from the surface of the body. The ability to lose heat in the latter way depends in part on the relative humidity of the atmosphere. Although there are ways of measuring this and translating the results into terms of experience, the senses have usually been the best guide. Movement of the air is a further factor that favors removal of heat—perhaps the greatest factor of all, because the cooling resulting from evaporation and convection largely depends on the velocity of the air. Clothing may interfere with or modify the effects. As these different modifying features—temperature, relative humidity and air motion—may be independently variable, it is difficult to establish a single standard of comfort. Heat prostration may occur at quite unlike external temperatures in different places. The art of securing human comfort in the face of unfavorable environment is being studied more carefully than it has been in the past, particularly because of the demands of certain industries and the newer problem of the invasion of the tropics by persons from more temperate regions. Some indexes of the conditions to be established are therefore quite desirable. The latest investigations of the Bureau of Mines [2] show that while a temperature of 57.7 F. with no air motion is too cold for comfort, a temperature of 85.6 F. with an air motion of 500 feet a minute is too warm to be comfortable. Perhaps two intermediate conditions—say 70.8 F. at 50 feet a minute and 75.8 F. at 100 feet a minute—will appeal to the comfort of the average person, provided the humidity is not outside the limits of the ordinary range. It is the problem of many arts to contribute toward securing these optimal environmental conditions for man. Here the stoker, the refrigeration expert, the clothier and furrier vie with one another in their attempts to thwart the machinations of the ubiquitous "weather man."

THE SCOPE OF THE PUBLIC HEALTH NURSE

The director of the American National Red Cross Association, which maintains a number of nurses in public health work, has recently defined in an emphatic statement the relation of such nurses to the public and to the physician with whom they practice.

In spite of the fact that both workers, public health nurses and practicing physicians, are seeking exactly the same goal by parallel roads, there exists in some places a lack of sympathy between the two groups which I am convinced is based on misunderstanding. Doctors who are not thoroughly familiar with the ways of public health nurses may fear that these nurses are in the habit of diagnosing, prescribing drugs, giving treatments and of committing various other ethical transgressions. The principles observed by every reputable public health nursing agency may be stated as follows:

1. Public health nurses do not diagnose, do not prescribe drugs and do not give treatment without a doctor's orders.
2. Public health nurses do not give nursing care after the first visit without a doctor's orders.

1. Heberden, William: Tr. Roy. Soc. London, 1826, Part II, p. 69.

2. McConnell, W. J., and Yagloglou, C. P.: The Kata Thermometer: Its Value and Defects, Pub. Health Rep. **39**: 2293 (Sept. 5) 1924.

3. Public health nurses do not recommend individual doctors but advise patients to go to their family physician.

4. Public health nurses do not recommend that patients change doctors or seek hospital care when they have a family physician.

It is probable that an occasional public health nurse who has not had the advantage of adequate preparation for her work, and who is not thoroughly trained in these principles, oversteps her prerogatives. No doubt, too, there are nurses now and then who wilfully disregard these principles. These, however, are few in number and do not represent the profession at large. The whole body of public health nurses should no more be judged by these miscreants than should the profession of law by the shyster lawyers or the profession of medicine by its less reputable members.

No doubt this statement was called forth by the fact that public health nurses have on occasions overstepped the prerogatives of their profession. When the nurse assumes the functions of a physician, attempting to diagnose or prescribe treatment, she is, of course, stepping entirely out of her legitimate field. Surely she cannot attempt to do these things without the certainty that sooner or later she will blunder and cause harm. The recognition by Red Cross officials that it is necessary rigidly to enforce the rules that have been outlined and to discipline those who transgress them is an encouraging sign of a desire to limit Red Cross activities to those purposes for which the association was organized.

EXPLOITING THE HEALTH INTEREST

One of the most profitable businesses subsidiary to quackery seems to be that of publishing magazines exploiting the public's ignorance of the human body and its processes, playing up various commercialized fads, and offering, through the advertising pages, a haven to quacks or near-quacks and nostrum venders. The outstanding example of such publications is *Physical Culture*, founded and published by one Bernarr Macfadden. Today Macfadden apparently has little use for modern medicine, except to attack it. But not always has he taken this attitude. When, in 1907, he was running a self-styled sanatorium, physicians received letters signed "Bernarr Macfadden" urging them to send their patients to the sanatorium and offering them "one-half of the regular fees charged for treatment and examination" received from victims obtained in that way. Today Macfadden makes no offers to split fifty-fifty with renegade medical men, possibly because he makes money more easily from the public direct. The harm done by *Physical Culture* in perverting public intelligence on matters pertaining to scientific medicine is incalculable. In promulgating doctrines that are at variance with the facts of modern science, the publication has a pernicious effect on the public health. *Hygeia*, the Association's magazine, founded for the purpose of interpreting modern medicine, is now giving to the public some facts concerning *Physical Culture*. The current (November) issue of *Hygeia* carries the first of a series of articles that will discuss *Physical Culture* and similar prophets of nondescript cults that thrive on the delusions they create. Physicians are urged to read this series, if not for their own information, then for that of their patients.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest: such as relate to society activities, new hospitals, education, public health, etc.)

CALIFORNIA

Hospital Conference.—The fourth annual conference of the hospitals of California will be held at Long Beach, November 6-8, and the council of the California Medical Association will meet at the same place, November 8. There are other southern California medical associations whose meetings are close enough to these dates to make a continuous visit of a week or more to southern California profitable. Every hospital, clinic, group, roentgen ray or other laboratory and other accredited medical organization is invited to send representatives to this conference. One of the outstanding features to be discussed is the alleged excessive cost of hospital service, and the committee appointed to investigate this problem at the last conference will make its report.

California Doctors.—There is no law in California that requires adequate education for the practice of the healing art, according to *California and Western Medicine*. The requirements for license are constantly being made easier and yet the number of unlicensed physicians is increasing. This condition has become so confusing, that journal states, that hundreds of visitors coming to the state bring with them a list of addresses of educated physicians which they consider as necessary in visiting here as if they were going to the Orient. Nearly one in each 100 of population in California is some sort of "doctor," but a comparatively small number of them take out a license of any kind. It is estimated there are 2,000 naturopaths, sanipractors and miscellaneous drugless practitioners in the state, 3,000 Christian science healers, 2,000 mental and religious healers, 500 electronic vibrationers, light manipulators and others of this group, 500 mail order "doctors," 500 psychanalysts and others in this group, 2,000 "patent medicine" venders and counter prescribers, 6,000 chiropractors, 2,000 osteopaths, 1,000 representatives of various welfare and uplift organizations who are diagnosing and treating disease without adequate education or license, 500 miscellaneous special fakers not included in the above, 1,000 medical, health, longevity and similar institutes, stores, shops or whatnot that are practicing medicine as organizations and not as individuals, and 8,000 physicians. These figures do not include the large and useful group of nurses, public health nurses, medical social workers and technicians engaged under the supervision of health officers, hospitals and other necessary organizations.

DELAWARE

State Medical Election.—At the annual meeting of the Medical Society of Delaware at Milford, October 14-15, Dr. Joseph P. Wales, Wilmington, was elected president; Drs. R. G. Paynter, Georgetown, and J. B. Derrickson, Frederica, vice presidents; Dr. W. O. LaMotte, Wilmington, secretary, and Dr. S. C. Rumford, Wilmington, treasurer. The next meeting will be held in Wilmington, the second Tuesday and Wednesday of October, 1925.

GEORGIA

State Board Election.—At the recent meeting of the state board of medical examiners in Atlanta, Dr. Jarrett W. Palmer, Ailey, was elected president; Dr. William C. Williams, Jr., Cochran, vice president, and Dr. Charles T. Nolan, Marietta, seretary-treasurer.

Tax for Tuberculosis Sanatorium.—A warrant for $250,000 was turned over to the state board of health, October 9, for the erection of a tuberculosis sanatorium at Alto. This was the amount due, it is reported, for the year 1924 from the cigar and cigaret tax, in accordance with the Milner bill, which provided that the Alto Sanatorium should receive $250,000 of the revenues for the years 1924-1925 and that the remainder of the tax fund should go to Confederate veterans. The amount remaining after paying the sanatorium fund was $200,000. It is believed that the cigar and cigaret tax will eventually pay the old veterans all that is now due them and the increased scale of regular pensions provided by the 1920-1922 legislature. The constitutionality of this tax has already been upheld in the Fulton superior court and the supreme court of Georgia.

ILLINOIS

Society News.—The annual meeting of the Illinois Society for Mental Hygiene was held, October 17, at the Chicago Woman's Club, Fine Arts Building, Michigan Avenue, Chicago.——The fifteenth annual meeting of the Illinois Tuberculosis Association will be held at Decatur, October 27-28, and will take the place of the regular fall clinical meeting of the Macon County Medical Society. The Decatur Medical Society cooperated in the preparation of the program and in making local arrangements for the session. Among others, Dr. Mazyck P. Ravenel, department of preventive medicine, University of Missouri School of Medicine, will address the meeting. Dr. H. Kennon Dunham, University of Cincinnati College of Medicine, will hold a tuberculosis clinic, and the Macon County Medical Society a surgical clinic at the Decatur and Macon County Hospital. The annual banquet and reception of the state tuberculosis society will be at the Orlando Hotel, October 27, Dr. Lewis C. Taylor, president of the Illinois State Medical Society, will be toastmaster. ——At a meeting of the McDonough County Medical Society at Macomb, October 7, Dr. Samuel Russell, Macomb, was elected president; Drs. John P. Roark, Bushnell, and Mildred Van Cleve, Madison, Wis., vice presidents, and Dr. Elizabeth R. Miner, Macomb, secretary-treasurer. Among others, four charter members of the society, which was organized in 1898, were present: Drs. Hendricks, Holmes, Marrs and Miner.

Chicago

Tract for Medical School.—The University of Chicago has set aside a tract of 9 acres, the two blocks west of Ellis Avenue facing the midway, to be devoted wholly to the new medical school. The buildings now on this tract will be removed in time, and the university will immediately spend $4,000,000 for hospitals, laboratories and teaching quarters, and eventually not less than $3,000,000 more. To endow the work to be housed in these buildings will call for $5,000,000 in the near future.

INDIANA

Typhoid Fever.—During the month of August typhoid fever was reported from forty-eight counties of the state. There was a total of 138 cases. In August, 1923, there were sixty cases reported.

State Board More than Pays Expenses.—According to the report of the secretary, Dr. W. F. King, the Indiana State Board of Health, during the last fiscal year, operated at a profit to the state of $36,307.78, and at the close of the fiscal year, September 30, turned back into the state treasury more than $8,000. The total appropriation to the board for the year was $170,000; which with fees and funds obtained from federal agencies, etc., made the total receipts of the department more than $233,000. The expenditures were $197,112.42. Of the $170,000 appropriation, the amount turned back into the treasury was $7,792.08.

Hospital News.—An additional unit and a convalescent home are included in the building plans of the James Whitcomb Riley Hospital for Children for the coming year. At a meeting of the executive committee of the Riley Memorial Association, October 8, it was decided to proceed with the building until the institution is completed, when the hospital will have a capacity of from 3,000 to 3,500 children annually. The first units, which were dedicated, October 7, have a bed capacity of 120. That part of the hospital which has been formally dedicated and presented to the state represents an expenditure of $1,500,000, the gift of about 30,000 people of the state and a state appropriation of $400,000.

IOWA

Land for New Medical School.—Condemnation proceedings have been instituted by the state on behalf of the University of Iowa to acquire property on both sides of the Iowa River at Iowa City for the new medical plant on the west side of the river and for other improvements on the east side. The state fixed a valuation of $24,000 on the west side holdings which it desired and from $2,600 to $8,000 each on certain property on the east side. The board of appraisers appointed by the state supreme court has just completed its condemnation proceedings.

Society News.—At the meeting of the Linn County Medical Society, October 11, Cedar Rapids, Dr. Charles S. Williamson, professor of medicine, University of Illinois College of Medicine, spoke on "The Management of the Commoner Forms of Heart Disease," and Dr. Arthur Steindler, Iowa City, gave an illustrated talk on "The Relief of Deforming Scars Following Burns." At the next meeting of the society, November 13, Dr. Ernest E. Irons, Chicago, dean of Rush Medical College, and Dr. George F. Suker, Chicago, will speak.——Dr. Louis A. Buie of the Mayo Clinic, Rochester, Minn., gave an address before the Scott County Medical Society, October 7, on "Proctology in General Practice," and Dr. Walter L. Bierring, Des Moines, on "Edema in Chronic Nephritis."

MAINE

Society News.—At the recent annual meeting of the Somerset County Medical Society, the president of the Rhode Island Medical Association, Dr. William F. Barry, Woonsocket, gave an address, and the following officers were elected: Dr. Ray C. Brown, Pittsfield, president; Dr. Edwin F. Pratt, North New Portland, vice president; Dr. Clyde Earle Richardson, Skowhegan, secretary-treasurer.——An organization has been formed in Rumford to raise $200,000 to found a hospital to serve that town and the towns of northern Oxford County.

MARYLAND

Health Work in Baltimore Schools.—Health work in the public schools has been placed under the direction of the Baltimore city health department. The commissioner of health has been allowed ten nurses and nine physicians for school work. There will be hospital rooms in the Eastern, Western, Forest Park and Clifton Park high schools, School No. 47, and the Colored High School. There will be three beds in each room and nurses on duty from 9:30 a. m. to 2:30 p. m. for the care of pupils with minor ailments. There will be a physician at the City College and at the Polytechnic Institute and a woman physician at the Eastern and Western high schools and one physician for each of the other four senior and junior high schools.

Society News.—The semiannual meeting of the Medical and Chirurgical Faculty of Maryland was held in Leonardtown, October 17-18. Members of the medical societies of Charles, St. Mary's and Calvert counties were hosts to the visiting physicians, who numbered about 200. Dr. Philip Briscoe of Calvert County, president, welcomed the physicians to southern Maryland. The Medical and Chirurgical Faculty was formed at Annapolis in 1799, where it met in the old state house. Dr. Upton Scott was the first president. Among the 101 founders of the society were Dr. William Beans, who went to release Francis Scott Key, after he had been imprisoned by the British; Dr. Gustavus Brown, who attended George Washington in his last illness, and Dr. Charles A. Beatty, owner of the land on which the city of Washington was built.

Scholarships to Provide Local Physicians.—Miss Eleanor S. Cohen has by the gift of $5,000 established a scholarship in the medical department of the University of Maryland which will be available to students in any of the classes of the course in medicine. Preference, however, will be given to students from those counties of the state which the medical council may from time to time consider most in need of medical practitioners.——By the will of the late Dr. Clarence Warfield, five scholarships have been established in the medical department of the University of Maryland and are available to students in any of the classes of medicine. Preference will be given also to students from counties in the state which are most in need from time to time of medical practitioners, and any student receiving one of the Warfield scholarships must after graduation and an internship agree to practice medicine for two years in the county to which he has been accredited, or in a county selected by the medical council. In the event that a student is not able to comply with this condition, the money advanced by the regents shall be refunded.

MASSACHUSETTS

Personal.—Dr. Harvey Cushing, professor of surgery at Harvard University Medical School, Boston, and surgeon in chief of the Peter Bent Brigham Hospital, delivered the dedicatory address at the opening of the new school of medicine at Western Reserve University, Cleveland, October 9. ——Dr. Wade S. Wright, instructor of industrial medicine, Harvard University Medical School, Boston, has resigned to take up work with the Metropolitan Insurance Company, New York.——Dr. C. A. Bonney has been made chief executive officer of the psychopathic hospital, Roxbury, Boston.

The Boston Medical Library.—This library is larger than the largest medical library in the British empire which, according to the president of the Royal Society of Medicine, Sir William Hale-White, has more than 120,000 books. The

Boston Medical Library, having grown beyond its accommodations, is seriously handicapped, being unable properly to arrange its volumes. The *Boston Medical and Surgical Journal* suggests that the next great task of the medical profession of that community should be the raising of funds to build ample accommodations and to create an endowment for the Boston Medical Library. Dr. Edwin H. Brigham, for many years the assistant librarian, celebrated his eighty-fourth birthday, September 22.

The Milton Fund for Research.—The late William F. Milton left the bulk of his estate to be given after his wife's death to Harvard University for a library, if the university had no suitable library building, and if not used in that way, the income of the fund was to be used for special investigation of a medical, geographic, historic or scientific nature to promote the physical and material welfare, to assist in the alleviation or curing of disease or to determine the importance of any discovery or invention or for any other special or temporary object of the above nature. President Lowell has stated that the legacy has now been received and is expected to yield an income of about $50,000. The university will be glad to receive from any member of its staff requests for aid in investigation. Requests must be received by December 1 and must specify the object and nature with as much precision as is necessary to judge their value, the time required and the expense. Allotment will be made for not more than two years but a grant may be renewed if an investigation requires more time.

MICHIGAN

University News.—It is reported that Dr. Preston M. Hickey, professor of roentgenology, University of Michigan Medical School, Ann Arbor, has been appointed executive head of the department of internal medicine, to succeed Dr. Louis M. Warfield.

Interns Must Pay Tuition.—In response to the petition of the last graduating class of the Detroit College of Medicine and Surgery, protesting the payment of a tuition fee for the fifth year in medicine, the board of education decided, it is reported, not to cancel this fee. The board passed an amendment, however, providing that the fee could be paid in four payments throughout the year. It was pointed out that to cancel this fee, which was to have been paid by October 1, would upset the entire budget scheme for the current year. If a change of policy is deemed advisable, it could not be made until the next fiscal year. A motion that this fee be cut from $175 to $100 was defeated. It was stated at the meeting that the city of Detroit already spends from $3,000 to $4,000 more per student than it receives from them in fees.

State Medical Meeting.—The recent annual meeting of the Michigan State Medical Society was unusually important. The outstanding features instituted at this meeting were:

(a) Providing of funds by increasing the annual dues to $10.00 per year.

(b) Providing for means whereby a full time, executive field secretary, working under the direction of the council and the secretary-editor, may be secured.

(c) Providing means whereby the council may institute postgraduate clinical instruction for the benefit of members by conducting clinics in the district and county societies.

(d) Providing for the continuation and extension of the work of the joint committee on public health education and its corps of speakers.

(e) Enabling the council to increase the scope, value and size of the state journal.

(f) Creating plans and policies that will increase the value of membership and contribute to each member a greater return and benefit of membership.

(g) Enhancing the prestige and educational influence of the society, thereby causing it to become potent for public and civic good.

Another evidence of increased organizational activity, was the friendly, spirited campaign for the election of a president of the society, in which, for the first time in fourteen years, it was necessary to open a ballot box for the election of president.

MINNESOTA

Alumni Association.—In accordance with a custom to hold annual meetings in connection with the meeting of the state medical association, the Minnesota Medical School Alumni Association met, October 10, at St. Cloud. Dr. Orville N. Meland, Warren, was elected president; Dr. John Warren Bell, Minneapolis, vice president, and Dr. Donald H. Daniel, Minneapolis, secretary-treasurer, for the coming year.

University Public Health Service.—The committee on public health of the Minnesota State Medical Association investigated the public health service of the University of Minnesota recently in response to a letter from the chairman of the state-wide publicity committee. Representatives of the public health service of the university stated that about 60 per cent. of the students are earning their way in whole or in part through the university, and that probably 90 per cent. of those who report to the health service would not see any physician if it were not for this health service. The public health service of the university refers many students, together with their findings at examination, to family physicians when they live in the twin cities, and it is the policy to do so when students are able to pay ordinary fees. The committee went on record as heartily endorsing the university public health service. It believes that the education of young people in the value of regular physical examinations, in reporting themselves early in case of sickness, and in showing them the value of the medical profession will be a great factor in keeping them later from being advocates of various cults. The state medical association, in conjunction with the University of Minnesota, held a health exhibit at the state fair this year for the first time.

MISSOURI

Physicians Arrested.—It is reported that Dr. Carlos Copeland, Monett, and Dr. William H. Richardson, Springfield, were arrested, September 13, by federal narcotic agents on a charge of violating the Harrison Narcotic Law.

Adcox' License Revoked.—The state board of health, it is reported, revoked the license to practice medicine of Robert W. Adcox, St. Louis, October 13. Adcox is now under bond on an appeal from a two year penitentiary sentence for alleged diploma mill frauds.

NEW HAMPSHIRE

Scarlet Fever Epidemic.—It was reported, October 10, that an epidemic of 130 cases of scarlet fever prevailed in Manchester. In 1898 Manchester had an epidemic of 200 cases of scarlet fever.

NEW JERSEY

Personal.—Dr. Julius Levy, Newark, of the New Jersey State Department of Health, represented the department at the Third English-Speaking Conference on Infant Welfare, London, England, in July. Dr. Levy addressed the conference on "The Prevention of Foundlings." The conference included 700 delegates, representing forty countries.

Bureau of Tuberculosis Established.—The state department of health has created a bureau of tuberculosis and Dr. Henry B. Dunham, Verona, has been placed in charge. Dr. Dunham was examiner for the State Sanatorium at Glen Gardner from 1907 until 1919, when he took charge of tuberculosis work in Essex County. He was one of the original members of the National Tuberculosis Association and one of three who started the American Sanatorium Association.

Preschool Clinics.—Plainfield has adopted the preschool clinic, seven schools being selected as places to conduct examinations. Visiting nurses called at every home to explain to mothers the purpose of the clinics, which were attended by about 200 mothers and children. Copies of the booklet, "The Runabout in the House of Health," or of the leaflet "What Do Growing Children Need?" were distributed. The physicians were paid $2 an hour for their services, which amounted in all to $30; the cost of 100 books was $13; of other printing, $30.35; and with additional books purchased the total cost was $83.35, the board of education paying $43 and the Visiting Nurse Association the remainder. A total of about 325 children out of a possible 425 who entered school have been reached by the nurses.

NEW MEXICO

Personal.—Dr. Alexander F. Brown, Fort Sumner, has been appointed health officer of De Baca County to succeed Dr. Hugh T. Brasell who has moved to Portales.——Dr. William H. Enneis, Clayton, health officer of Union County, has gone to Harvard University for a year's study in the school of public health under a fellowship of the Rockefeller Foundation.

NEW YORK

Virulent Smallpox.—The first death in three years in New York from virulent smallpox occurred, September 25, one of two cases reported from Elmira. The last previous death from virulent smallpox was a traveler from Illinois taken off a train in Buffalo, March, 1921, because of illness. He died a few days later in the Municipal Hospital. The invasion of

this state by virulent smallpox was not unexpected considering the large number of unvaccinated people.

Children's Courts.—There is today in New York a children's court in every county in the state, and all territory in every county is now under the jurisdiction of the children's court with the single exception of that part of Erie County which is outside the city of Buffalo. In 1902 there was only one children's court in the state. The law passed in 1922 created a statewide means for the protection of children. Chancery proceedings rather than criminal are followed, children being considered wards of the state, to be protected from cruelty or to be guided away from delinquencies. In forty-eight counties, the county judges serve also as judges of the children's court, but five counties (Westchester, Albany, Montgomery, Herkimer and Clinton and New York City) have elected special children's court judges.

Tuberculosis Clinic Under State Aid.—Under the new law, which provides that the state may appropriate 50 per cent. of the amount given by the board of supervisors of the county for promoting a health program, the first free county tuberculosis clinic has been established in Washington County. The organizations cooperating in its management are the Washington County Medical Society, the board of supervisors, and the Washington County tuberculosis and public health committee. The medical examiner for the clinic is Dr. Horace J. Howk, superintendent of the sanatorium at Mount McGregor. Washington County is among the first, excluding tuberculosis hospitals, to provide free roentgen-ray service. The clinic has five rooms at Hudson Falls. The findings of the physical examination and roentgen-ray service and interpretations are given to the family physicians who refer the cases to the clinic. All physicians in the county have used the clinic service.

New York City

The Carpenter Lecture.—At the stated meeting of the New York Academy of Medicine, October 16, the Wesley M. Carpenter lecture was delivered by Dr. Thorwald Madsen, director of the Serological Institute, Copenhagen, Denmark.

Medical Society Opens New Home.—The Bay Ridge Medical Society met, October 15, in their recently acquired home, 122 Seventy-Sixth Street. Dr. John Cooper Graham presided and accepted on behalf of the society roentgen-ray equipment which has been placed at the service of the society by Dr. Frederick E. Elliott.

Health Conference.—The Queensboro Tuberculosis Association announces a public health conference and the fifth annual meeting of the association, to be held in cooperation with the department of health, the department of education and the Medical Society of the Boro of Queens at the Eagle Palace, Jamaica, October 28-29. Dr. Frank Overton, executive editor, *New York State Journal of Medicine*, among others, will speak on "The Physician's Part in Civic Health."

Alumni Association.—With the recent announcement of the new medical center to be erected by the Presbyterian Hospital, jointly with the Columbia University College of Physicians and Surgeons, the alumni association of the medical school is making a drive for new members. There is at this time an unusual opportunity to help the medical school. The annual membership fee is $5, payable to the treasurer, Dr. Francis C. Wood, Crocker Cancer Research, 1145 Amsterdam Avenue, New York.

Police and Fire Surgeons.—The National Association of Police and Fire Surgeons and Medical Directors of Civil Service Commissions held its annual meeting at the Hotel Commodore, October 8-10. The convention approved a report by its committee calling for standardization throughout the country of mental and physical requirements for police and fire department appointments. Dr. Harry F. Archer, honorary surgeon of the New York Fire Department, was elected president for the coming year; Dr. J. J. Wyeth, New York, secretary, and Dr. F. M. Manta, New York, treasurer. The next annual meeting will be in Grand Rapids, Mich.

Personal.—At the opening exercises of the Columbia University College of Physicians and Surgeons, September 24, Dr. Allen O. Whipple, professor of surgery, gave an address on "The History of Medicine as an Aid to the Undergraduate in the Study of Medicine."——Prof. S. P. L. Sörensen, Copenhagen, delivered lectures recently at the Rockefeller Institute for Medical Research on "The Osmotic Pressure of Proteins" and before the New York section of the American Chemical Society, October 3, on "The Heat Coagulation of Proteins."——Dr. Nicholas Kopeloff has returned to the Psychiatric Institute, Ward's Island, after a year at the Pasteur Institute in Paris and other European institutions.

NORTH CAROLINA

Hospital Sold.—The Baptist Hospital, Charlotte, was recently sold under a first mortgage of $90,000 to the mortgagee for part payment of the original purchase money in 1922. The hospital property includes accommodations for more than 100 patients and 45 acres of city lots. No announcement has been made as to the future disposition of the property or the management of the hospital.

OHIO

Personal.—Dr. Haven Emerson, professor of public health administration in the Columbia University College of Physicians and Surgeons, New York, will make a survey of health conditions in Cincinnati, beginning about November 10, it is reported.

Heart Clinic in Marion.—Under the auspices of the Marion County Medical Society, a cardiac clinic was held in Marion, October 7. About seventy-five patients were presented and about 250 physicians and laymen from various parts of the state attended. Among others, Dr. Samuel Calvin Smith, Philadelphia, Dr. Theodore Zbinden, Toledo, and Drs. Fillmore Young and Elmer O. Richardson of Marion gave demonstrations. Dr. Smith demonstrated the MacKenzie polygraph and the electrocardiograph, and spoke at a dinner on "Growing Older Gracefully."

Committee to Administer School.—Following the recent resignation of Dr. Henry Page, a committee has been appointed by the board of directors of the University of Cincinnati, to administer the work of the college of medicine, it was reported, October 8. The members are: Dr. Arthur C. Bachmeyer, superintendent, Cincinnati General Hospital, Dr. Alfred Friedlander and Dr. Nathan C. Foot. Dr. Bachmeyer, as chairman of the committee, will be the acting dean. This plan is similar to that adopted in the absence of the late Dr. Christian R. Holmes during his service in the World War. The following appointments were approved by the board:

Dr. Carey P. McCord, lecturer in safety and first aid; Drs. George F. Munns, James S. Mathews and Frank Earl Stevenson, Leo Samuel Friedman and Mendel Zeligs, assistants in pediatrics; Dr. Charles S. Noonan, instructor in medicine, and Dr. Hubert H. Shook assistant in medicine; Dr. Charles E. Kiely, assistant clinical professor of neurology; Drs. James J. Gorman and Harold Reineke, assistant resident physicians; Dr. Howard D. McIntyre, instructor on the academic staff in the department of neuro-psychiatry; Dr. Abraham Gerson Carmel, instructor in anatomy.

PENNSYLVANIA

Personal.—Dr. Edwin C. Blackburn has been elected medical examiner of the city schools of Lock Haven.——Dr. Theodore Diller, Pittsburgh, gave a dinner to Dr. William A. Pusey, president of the American Medical Association, October 4, at which Dr. Pusey discussed medical education, reiterating his belief that a boy might begin the study of medicine after finishing high school and continue there three years and then take a year and a half in a hospital. He stated that this plan would bring many into the study of medicine who were going into other callings and that it might prove a partial remedy for the lack of physicians in country districts. The subject was discussed from many angles by other guests at the dinner.

Society News.—At a recent meeting of the Cumberland Valley Medical Society, Dr. W. Hamilton Smith, Hagerstown, was elected president; Drs. Leslie M. Kauffman, Kauffman, George L. Zimmerman, Carlisle, and Victor D. Miller, Jr., Hagerstown, vice presidents, and Dr. William A. Gordon, Hagerstown, secretary.——The Public Relations Committee of the Allegheny County Medical Society plans to furnish medical lecturers for societies and clubs in Pittsburgh during the coming winter. Members willing to do this service are requested to forward their selected subjects to the secretary of the committee.——Dr. Elliott P. Joslin, Boston, will deliver the first postgraduate lecture of the Allegheny County Medical Society, October 23, on "The Management of Diabetes by the General Practitioner."

The Expense of Smallpox to Pittsburgh.—Of the emergency fund of $100,000 voted by the council of Pittsburgh, $65,000 has already been expended. There have been 111 cases in the smallpox epidemic, and twenty-two deaths; of the 111 victims, 104 had never been successfully vaccinated. Since about $11,000 worth of vaccine was sold by the city to physicians that amount will be returned to the treasury. Furthermore an ambulance was remodeled for hospital purposes, and more than $7,000 was spent for hospital supplies, mostly permanent equipment. These items and others may be deducted from the total expenditure, leaving the actual cost of the epidemic to date about $40,000 exclusive of private

expenditure. There have been about 214,000 free vaccinations made by the city, a distribution of about 360,000 free vaccine points, and the sale of 110,982 to physicians. The largest single expenditure was for vaccine which amounted to $29,286.

Philadelphia

Hospitals and Interns.—Competition for efficient interns in local hospitals has caused the executive committee of the Philadelphia Hospital Association to delay the yearly appointments from January 1 to the first two weeks in February. This plan will go into effect in 1925.

City Health Offices Merged.—The office of chief of the bureau of public health and chief medical inspector will be combined under one head as part of the budget that was submitted to the council, October 15, by recommendation of Dr. Wilmer Krusen, director of the department of public health. It is understood that Dr. Andrew A. Cairns, chief medical inspector, will fill the new position.

Heliotherapy Demonstration.—A demonstration of heliotherapy for nonpulmonary forms of tuberculosis among children will be given by the Philadelphia Health Council and the Tuberculosis Committee, beginning about December 1. The service will be established in the Chestnut Hill Home for Consumptives which is maintained by the Protestant Episcopal City Mission. Provisions have been made for the beginning of the sun-cure service with a minimum of twenty-five children. Plans providing separate decks for use as solaria for boys and for girls have been drawn up.

TENNESSEE

University Buys Land.—The purchase of property of 600 feet frontage on Union Avenue, extending from Union to Monroe avenues, for the expansion of the University of Tennessee College of Medicine, Memphis, has been completed and the deeds filed.

Society News.—At a meeting of the East Tennessee Medical Association recently at Harriman, Dr. Henry M. Carr, Harriman, was elected president; Drs. James R. Nankivell, Athens, and John O. Woods, Elizabethton, vice presidents; Dr. James Victor Henderson, Knoxville, secretary-treasurer. The next meeting will be held in Cleveland.——Dr. Philip H. Stewart, Paducah, Ky., was recently elected president of the Walnut Log Medical Society, an organization comprising a limited number of physicians of Kentucky, Tennessee, Missouri and Arkansas, which meets annually at Walnut Log Lodge on Reelfoot Lake.

Resolution of Memphis and Shelby County Society.—A resolution was adopted by the house of delegates of the Memphis and Shelby County Medical Society, September 2, instructing the committee on public health and legislation to take up with the American Medical Association and the Tennessee State Medical Society, and through them with all the state and county medical societies in the country and through them with all the local civic organizations in the country, to the end that the following clause in the World War Veterans' Act, recently passed by Congress, be repealed:

"The director is further authorized, so far as he shall find that existing government facilities permit, to furnish hospitalization and necessary traveling expenses to veterans of any war, military occupation or military expedition since 1897, not dishonorably discharged, without regard to the nature or origin of their disabilities."

TEXAS

Case of Yellow Fever Imported.—Martin Perez, who arrived in New Orleans from Yucatan, Mexico, September 29, and in Houston, October 1, died of yellow fever, October 9, in Houston. It is reported that the eighty-eight contacts were immediately placed under guard in a detention camp.

UTAH

Typhoid Epidemic.—There is an outbreak of typhoid fever in Salt Lake City, it is reported, which on October 8 comprised fifty-nine cases.

WASHINGTON

School Charged with Selling Diplomas.—Charges were filed by Attorney General Dunbar in Seattle, October 16, it is reported, against the American University of Sanipractise, alleging that that school sold physicians' diplomas at prices ranging from $3.75 to $500 each without the formality of a course of instruction as required by law. The state asks for a permanent injunction to restrain the school from issuing physicians' diplomas and that the corporation be dissolved and a receiver appointed.

WEST VIRGINIA

Society News.—Mr. Sterrett O. Neale has been selected by the committee appointed by the council at the last annual meeting as the executive secretary of the West Virginia State Medical Association.

WISCONSIN

Personal.—Dr. Hoyt E. Dearholt, Milwaukee, of the Wisconsin Antituberculosis Association, was elected president of the Mississippi Antituberculosis Conference at the annual meeting in Sioux Falls in September to succeed Dr. James S. Pritchard, Battle Creek, Mich.

Sparta Forbids Liquor Prescriptions.—An ordinance was introduced in the council of Sparta, September 29, at the request of many citizens, it is reported, which would forbid druggists within the city filling physicians' prescriptions for intoxicating liquor. The city attorney who drew the ordinance stated that he had followed a case in which it had been stated in the opinion that the city of Los Angeles had a right to forbid by ordinance the filling of prescriptions for alcoholic liquors by druggists. He also cited cases in Tennessee, Missouri and Nebraska. The ordinance passed the council by a vote of six to one.

PHILIPPINE ISLANDS

Broadcasting Lectures on Hygiene.—The public health service of the Philippines has arranged for a series of talks on hygiene to be broadcast fortnightly. The first one given was on the dangers of intestinal parasites in man.

Pavilion for the General Hospital.—The widow of Dr. Potenciano Guazon has donated funds for the construction of a surgical pavilion to be called by his name. He was in charge of the surgical service at the hospital, and had planned the new building.

GENERAL

Six Months of Smallpox.—Reports from 678 cities of the United States and Canada show that there were 18,811 cases of smallpox, with 242 deaths, in those cities during the first six months of this year. Last year and the year before there were 7,170 cases and 7,355, during the first six months of the year. There were 1.3 deaths per hundred cases this year, 0.8 deaths per hundred cases last year, and 3.1 deaths per hundred cases in 1922. Detroit, Mich., Windsor, Canada, Pittsburgh, Pa., and New Britain, Conn., had the highest death rates. The important point of the smallpox situation this fall is that it is nationwide.

Journal Changes Name.—The *Journal of Medical Research*, official organ of the American Association of Pathologists and Bacteriologists, will change its name to the *American Journal of Pathology*, January, 1925. It has been given a subsidy of $7,500 a year for five years for the distinct purpose of helping pathology regain the prominence it formerly held as a fundamental branch of medicine, and to encourage young men of the best type to take up pathology as a career. The *American Journal of Pathology* will be published under the management of the present editorial board and will appear bimonthly. It will be restricted to pathology, especially the morphologic side.

League of Nations' Data on Opium.—Twenty-five nations, representing a total population of about 745,000,000 people, have submitted reports to the League of Nations on the amount of opium and its equivalents required by these countries. The total requirements as thus estimated are 551,548 kg. The average requirement per capita varies from 1.2 gm. in Switzerland to .03 in Haiti, and the average requirement per capita for all of the nations is a little more than .4 gm. per year. India's requirement is the greatest, amounting to 364,800 kg. and the United States is second with a total requirement of 61,818 kg. However, the per capita requirement in India is 1.14 gm. while that of the United States is 1.56 gm. The purpose of the work of the opium conference of the League of Nations is to control, by mutual agreement and cooperation among the nations, the production, manufacture and distribution of opium and other drugs of a similar nature.

National Board of Medical Examiners.—Surg.-Gen. Merritte W. Ireland, president of the National Board of Medical Examiners, has announced the names of candidates who received the highest honors at the summer examination of the board. The examination is open only to students of Class A medical schools, which automatically eliminates candidates with fake diplomas. The National Board of Medical Examiners was organized to establish a uniform standard of

such character that its certificate of qualification to practice medicine would be accepted by licensing boards throughout the country, and its certificate is now accepted by twenty-nine states and territories and several foreign countries. The board aims to safeguard and simplify the process of determining who is qualified to practice medicine and also to aid medical colleges and state authorities in promoting high standards of medical education and practice. The summer examination was held in thirty-three cities in various parts of the country and at three R. O. T. C. army camps.

Congress of National Safety Council.—At the thirteenth annual meeting of the National Safety Council, Louisville, September 29-October 3, Carl B. Auel, Westinghouse Electric and Manufacturing Company, East Pittsburgh, was elected president, and William H. Cameron, Chicago, secretary and managing director. About 3,500 attended, including representatives from Canada and Alaska. A resolution, showing that 75 per cent. of the 53,000 deaths caused annually by accidents are avoidable, recommended that community safety councils in every "sizable" city and large town be organized wherever practicable to create interest in safety. The resolution also recommended the issuance of state driver's license for operators of motor vehicles qualified by examination as to ability and fitness, and the revocation of such licenses for cause. It recommended the formation and adoption of uniform traffic regulations, the consideration of street traffic as a state and municipal problem of engineering importance, and the creation of through traffic routes with maximum safety factors determined by engineering analysis and revision.

Southern Medical Association Meeting.—The eighteenth annual meeting of the Southern Medical Association will be held in New Orleans, November 24-27, under the presidency of Dr. Charles L. Minor, Asheville, N. C. The scientific work will follow the plan of last year, all sections meeting in half day sessions. The program will be made up of about twenty sections and conjoint meetings. Special reduced round trip railroad rates have been granted on the certificate plan. The usual president's reception will be on Tuesday at the Athenaeum and will be followed by a ball. Wednesday evening has been set aside for the alumni reunions, and this is to be the occasion of a home coming for the alumni of Tulane University. On Friday and Saturday following the meeting, there will be clinics at Charity Hospital, Touro Infirmary, Hotel Dieu, Presbyterian Hospital, Mercy Hospital, St. Rita's Infirmary, dispensary for women and children, and at the Eye, Ear Nose and Throat Hospital. For those who wish to extend their trip from New Orleans to the tropics, a palatial boat sails to Cuba, Panama Canal and other points, Saturday, November 29.

Society News.—The second Pan-American Red Cross Conference will be held in Washington, D. C., May, 1926, under the auspices of the League of Red Cross Societies. This date has been tentatively fixed by the American Red Cross and the league on recommendation of the Pan-American conference held in Buenos Aires last year.——At the annual meeting of the American Association of Railway Surgeons, Chicago, October 15-17, Dr. Dave Y. Roberts, Louisville, Ky., was elected president; Drs. Mark L. Bishoff, Topeka, Kan., Frank H. Walke, Shreveport, La., and William G. Kemper, Manitowoc, Wis., vice presidents; Dr. Frederick G. Dyas, Chicago, treasurer (reelected), and Dr. Louis J. Mitchell, Chicago, secretary-editor (reelected).——The Clinical Orthopedic Society, the membership of which is made up of orthopedists from the central states, will hold its annual meeting at the Lakeside Hospital and Mount Sinai Hospital, Cleveland, November 10, and at the Cincinnati General Hospital, Cincinnati, November 11.——At the last annual meeting of the American Radium Society, Chicago, Dr. Douglas Quick, New York, was elected president; Drs. Albert Soiland, Los Angeles, and Ernest C. Samuel, New Orleans, vice presidents; Dr. Edwin C. Ernst, St. Louis, secretary; Dr. Robert E. Loucks, Detroit, treasurer, and Dr. James T. Case, Battle Creek, a member of the executive committee.

Defective Vision in School Children.—Exaggerated statements concerning the amount of defective vision among school children are being made with the concealed motive of alarming people into buying spectacles, according to the managing director of the National Committee for the Prevention of Blindness in his address at the American Public Health Association meeting at Detroit. He said that any impression that the nation is rapidly going blind or that over half of our school children need spectacles is obviously exaggerated. The true state of affairs is that about one-eighth of the school children have either eye diseases or visual defects, many of which may be removed by proper glasses or by medical attention. It seems the percentage of defects of vision in rural districts is generally higher than in the city, and that the probable explanation is that corrective measures in the cities are superior to those in the country. The difference can also be accounted for partly by inferior lighting in rural schools and rural homes. According to reports from about 300 cities of more than 10,000 population, received by the National Committee for the Prevention of Blindness, there were only 20 per cent. of the cities with examinations made by school physicians alone. In 25 per cent. of the cities nurses made the examination alone, and in 20 per cent. of the cities the examinations were made by physicians and nurses cooperating, and in 15 per cent. of the cities the examinations were made by the classroom teachers alone.

Fatal Accidents in the United States.—It is estimated that 84,000 deaths from fatal accidents in the United States occurred during 1923, which, according to the *Statistical Bulletin*, was 7,500 in excess of the number for 1922. The number of accidental deaths each year in the United States is now equal to the whole population of such cities as Savannah, Ga., or Evansville, Ind. Fatal accidents amount to 209 per day. Heading the list of causes is the automobile with thirty-seven deaths per day; then come falls with thirty-six deaths per day, and drowning with nineteen per day. There are eighteen persons a day in the United States killed in railroad accidents. That this mortality rate is unwarranted is shown by comparison with the rate for England and Wales where, during 1922, the fatal accident rate was 321 per million of population, while in the United States it was 698. There is in the automobile situation a single encouraging note. In a group of 135 cities in which the number of fatal accidents was known for 1922 and 1923, there were thirty-nine cities in which fewer deaths occurred in the latter year. In this group of thirty-nine cities there was a total of 1,334 deaths due to automobiles in 1922 and 1,187 in 1923, a reduction of 17.2 per cent. The most conspicuous example of life saving was in Worcester, Mass., where the number of deaths declined from twenty-six to twelve in these two years; in New Bedford, Mass., the decline was from nineteen to eight; in Berkeley, Calif., from thirteen to five; in Norfolk, Va., from eleven to five; in San Antonio, Texas, from twenty-eight to eighteen; in San Diego, Calif., from thirty-one to eighteen; in Topeka, Kan., from twelve to seven; in Flint, Mich., from twenty-one to fourteen; in Fort Worth, Texas, from sixteen to ten; in Madison, Wis., and Steubenville, Ohio, from ten to six; in New Britain, Conn., from seven to four, and in Reno, Nev., from four to one. Vigorous effort was directed toward the regulation of automobile traffic in all of these cities. The automobile continues, however, to be an outstanding hazard.

LATIN AMERICA

Personal.—Dr. E. Fiterre, who has been studying in Paris on the Albarran fellowship for two years, was appointed associate professor of physiology at the University of Havana. The present beneficiary of the Albarran fellowship is Dr. N. Puente Duany, recently appointed associate professor of anatomy at Havana.——A banquet was tendered Dr. J. de Barros Barreto on the occasion of his nomination as chief of the public health service of the state of Parana, Brazil.——Dr. Salvador Mazza, assistant professor of microbiology at the University of Buenos Aires and secretary of the *Prensa Médica*, has returned from several months of study in the medical centers of other countries. He has been appointed director of the laboratory of the Hospital de Clinicas.

FOREIGN

Epidemic Report.—A report of the health section of the League of Nations notes that plague in British India was the cause of 45,529 deaths between May 11 and July 12; in Egypt between June 11 and August 12 it was the cause of thirty-five deaths, and in Perú from May 1 to June 30 the cause of twelve deaths.

Carnegie Hero.—Dr. Ernest Harnack, of the London Hospital, London, England, has been granted £75 yearly by the Carnegie Hero Fund. The London Hospital had previously granted him an annuity of £285. Dr. Harnack lost both arms from roentgenologic injuries received before the necessity of protection was understood.

Morocco Has Clinical Week.—After the Brussels and Toulouse "journées médicales" which proved so successful, the Société de médecine et d'hygiène of Morocco and the *Maroc médical* have organized a series of conferences along the same lines. This clinical week is to be at Casablanca in

December, and a study is to be made of "Cancer in Morocco" and "Amebiasis." There will be a scientific exposition and social events.

Medical Degree for Dentists.—It is reported that at a recent general meeting of the Association française de chirurgie at the Faculty of Medicine, Paris, the members expressed their conviction of the need of a new statute requiring the M.D. degree for persons who intend to practice dentistry in France. They did not believe that the degree of Doctor of Dental Surgery is a sufficient qualification, and recommended that the administrative council continue its efforts to accomplish this end.

Preventive Medicine in Belgium.—The *Bruxelles-médical* gives the text of two circulars sent out recently by the government to all health officers, at the suggestion of the International Health Board, urging that every effort should be made to have blood tests made of all pregnant women. Arrangements should be made by which all women can be given the benefit of the test at the second nonappearance of the menses. The second circular asks all social hygiene institutions to specify the number of syphilitics they have encountered since 1919, and the number of cases of tabes and of general paralysis. The aim is to ascertain the influence on the development of tabes and paralysis exerted by the treatments in vogue the last five years.

Foundation for Scientific Research.—The Fonds d'Etudes Roche has been organized by the manufacturing chemists, F. Hoffmann-La Roche and Co., who offer space in their establishment, at Basel, to research workers in experimental medicine and biology, and all facilities for research and a stipend, if desired. Only exceptionally will a longer course than three months be granted. The places are open to medical students, physicians and other scientists. Prof. F. de Quervain, Kirchenfeldstrasse 60, Berne, is chairman of the committee, to whom application must be made and credentials presented. The work is entirely independent of regular work in the establishment, and the subject must be approved by the committee, consisting of Professors Cloetta, Zurich; Michaud, Lausanne; Roch, Geneva; Staehelin, Basel, and de Quervain, Berne.

Personal.—Dr. S. P. L. Sörenson of the Carlsberg Laboratories, Copenhagen, was recently elected an honorary member of the American Chemical Society.——Dr. Wilhelm Stepp, professor of internal medicine at the University of Giessen, Germany, who is doing research work at Baltimore, has been appointed professor at the University of Jena following the resignation of Professor Stintzing.——Dr. Douglass Cruickshank, Toronto, formerly director of pathology, American University of Beirut, Syria, has been appointed professor of surgery to succeed Dr. St. John Ward.——Dr. Sanzio Vacchelli is the chief of staff of the newly inaugurated Codivilla Institute for Heliotherapy in the mountains near Bologna, an annex of the Rizzoli Institute of which Dr. V. Putti is director. The Codivilla Institute is at an altitude of 1,300 meters and is designed exclusively for tuberculosis of bones and joints.——The Prussian Academy of Sciences has given Dr. Fritz Lewy of Berlin a grant of 150 marks to aid his research on the physiology of cell fission.——A subscription has been opened to found a fellowship in honor of Prof. A. Carle's thirty years of work as professor of surgery at the University of Turin. Prof. G. M. Fasiani is the treasurer of the fund, 36 via Ospedale, Turin.——The traveling fellowships offered by the Spanish board for promoting postgraduate work and research have been awarded to Dr. Pedro Ara Sarriá for nine months of research on embryology in the United States; Dr. A. Arguelles Terán, child and maternity welfare work, in Switzerland; Dr. J. García Blanco Oyarzábal, physiologic chemistry, in Germany, and Dr. B. Pérez Velasco, streptococcus infections and their treatment, in Germany.——Dr. Jean Guisez has been asked to deliver the Semon lecture this year at the University of London. His subject will be "Malignant Tumors of the Esophagus."

Deaths in Other Countries

Sir Andrew J. Horne, master of the National Maternity Hospital, Dublin, and formerly president of the Royal College of Physicians of Ireland; aged 68; September 5.——Major-Gen. **Sir Robert Samuel Findlay Henderson,** a distinguished retired officer of the Army Medical Service, at Twickenham, England; recently, aged 65.——Dr. **D. van Duyse,** professor of pathologic anatomy, University of Ghent, author of works on embryology, ophthalmology and anatomy.——Dr. **Pascual Palma,** professor of surgery at the University of Buenos Aires.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept. 29, 1924.

The Dangerous Position of the White Man in South Africa

The census director, Mr. Cousins, who is now undersecretary for labor, has issued an ominous report as to the survival of the white race in South Africa. He lays emphasis on the increase of the colored population in the union as compared with the white, in spite of the fact that in the influenza epidemic of 1918 half a million natives died—a fact not published heretofore. Mr. Cousins concludes that the European race can hold its own in South Africa only by accessions from abroad. Failing this, it must abandon the prospect of maintaining a white civilization, except as a proportionately diminishing minority in the face of an increasing and ultimately overwhelming majority. It may then be forced to abandon its domination or even to abandon the country. It may accept the solution of degeneracy by perpetuating a Eur-African civilization. In thirty years, on the present figures, the whites in South Africa will number 4,500,000, while the Bantu population alone will have increased to 13,000,000. The alternative is for the whites to take timely measures that they are not left behind by accepting the obligation to provide a home for the surplus population of Europe. However, both the nationalists and the labor party, which comprise the present government, have set their faces for years against any comprehensive scheme of bringing immigrants from abroad.

Welfare Work in Industry

An important conference on welfare work in industry has been held at Swanick, Derbyshire. Welfare workers from nearly 100 important industrial concerns throughout the country and others from foreign countries attended. In his presidential address, Mr. A. C. Marshall referred to the disappointment felt at the results of the shorter working day, and said that the lack of coordinating effort throughout industry was responsible. Given a highly organized and efficient organization, which paid due attention to the conservation of human and mechanical energy, given a sound trustful spirit, with all imbued with the doctrine of hard work, Great Britain would yet startle the world.

WHAT THE PSYCHOLOGIST CAN DO FOR INDUSTRY

Mr. D. R. Wilson, secretary of the Industrial Fatigue Research Board, said that there was no greater asset to any country than the bodily and mental health of its workers. It was remarkable that employers, who had suffered such heavy losses during recent years, had managed to retain so large a number of welfare workers. The explanation was that they found their presence to be not only a social duty to their workmen but a paying proposition to themselves. Industrial disease had been studied for many years, but what had been neglected and what was only beginning to be studied were the minor changes in the human body and mind, and their adjustment to everyday conditions.

HOURS AND PRODUCTIVITY

Dr. C. S. Myers, director of the Institute of Industrial Psychology, spoke of the interesting results achieved by the psychologist in increasing industrial production. He referred to the importance of rest pauses in factories, and gave statistics showing how a 3 per cent. reduction in working hours gave an increased output of 5 per cent. But he emphasized the bad effect on production of excessively short hours. In the boot trade, the rate of production progressively fell after

the hours of labor had been reduced below forty a week. In the future there would be a closer association between the welfare worker and the industrial psychologist. As the education of the welfare worker became more complicated, some knowledge of industrial psychology and physiology would be more necessary. The main difference would be that while the function of the welfare worker would be to observe, the industrial psychologist would be called in for action, investigation and experiment.

HEALTH AND ACCIDENT PREVENTION

Dealing with the physiologic aspects of accident prevention, Dr. H. M. Vernon, investigator for the Industrial Fatigue Research Board, discussed the prevention of accidents by insuring that workers were in the best of health and were working under the best possible factory conditions. The worker suffering from a bad cold or acute indigestion was not likely to concentrate his attention on his work as a healthy person would. The home office committee had found that in all industries in which investigations were made, accidents were more numerous in winter, when there was a good deal of artificial light, than in summer, when there was little or none. Undoubtedly, considerable fatigue had increased the frequency of accidents, but it seemed that under ordinary working conditions the physiologic state of the workers was a much more important factor. The increase of accidents from speeding up production was probably more physiologic in origin than psychologic. The atmospheric conditions under which industry was carried on might have a great influence on the frequency of accidents. In one factory experiment it was found that there was a minimum of accidents when the temperature was between 65 and 69 F. When the temperature fell 5 degrees there were 6 per cent. more accidents. Another 5 degrees lower, accidents increased by 16 per cent., while a further drop of 5 degrees involved 35 per cent. increase. At temperatures above 69, accidents again increased in frequency.

Dr. Dearden, health officer of Manchester, said that it was beginning to be realized by those interested in industry that medical science was capable of doing a great deal for industry. Applied to British industry, it should bring about an annual saving in labor turnover of more than $300,000,000 in lost time, and in industrial convalescence of many millions more. To assess the total saving at $700,000,000 a year was well within the range of possibilities.

Whole Meal Versus White Bread

Discussion on the question of whole meal versus white bread has again been revived in the lay press. The recent statements of certain theorists that white bread, because of absence of vitamins, predisposes to cancer has stimulated the consumption of brown bread. Writing to the *Times*, Mr. V. G. Plimmer, holding that experiments on animals do not carry as much conviction to the lay mind as unintentional experiments on man, refers to the classical example of the siege of Kut. While the supply of white flour lasted, our troops suffered from beriberi because of insufficient B vitamin in the food. When the supply of white flour was exhausted and they had to use the same coarse whole meal flour as the Indian troops, beriberi disappeared. Again, in Newfoundland every winter the people, living largely on white bread, suffered from beriberi. But when one winter a ship was stranded, laden with whole meal flour, which was consumed by the inhabitants of the district, beriberi disappeared.

Another correspondent made inquiries as to the proportion of white and brown bread used by the leisure and laboring classes. He found that the bakers who cater for the leisure classes sell more brown bread than do those who cater for the laboring classes. The largest bakers in Scotland, who cater particularly for the wage earners, distribute 97.6 per cent. of white bread and 2.4 per cent. of brown. In the mining districts, the proportion of white bread sold rises to 99 per cent.

New School of Pathology for Cambridge

The vice chancellor of Cambridge University announces that Mr. Ernest H. Gates of Milner Field, Bingley, Yorks, has offered to find the necessary sum to enable the university to accept the offer made by the Rockefeller Foundation, with regard to the provision of a school of pathology. Mr. Gates has done this in memory of his wife, who died, after a long period of suffering, from an obscure disease of the lymphatic system, in the confident hope that the school will prove of benefit to mankind.

Health of the Army

Sir William Leishman, director-general of army medical services, has issued the first postwar report. He finds that the physical standard of the British army, during the year under review, is much lower than that which existed prior to the Great War. The reason is that hasty enlistment to fill vacancies was necessary after the armistice, while on those who remained the effects of war were still manifest. Further, experienced medical officers were not always available to examine recruits. The following figures are given:

Ratio of Rejections per Thousand Inspected

	On Examination	Within Six Months of Enlistment	Total
1912-1913.....	202.50	12.01	214.51
1920-1921.....	354.01	28.80	382.82

The most frequent cause of rejection was defective vision, next came loss or decay of teeth, and next inadequate chest measurement. The most important causes of rejection after six months were, in order of magnitude, middle ear diseases, including deafness; defective vision; debility, and defective intelligence. There was an encouraging decline in the incidence of venereal disease, and especially in that of syphilis, the methods of prevention in use being in the nature of a "cordon sanitaire."

The National Institute for the Blind

The annual report of the National Institute for the Blind for the year ended March 31, 1924, is interesting. The institute is the largest institution for the blind in the world. Its embossed publications are given away to individuals; presented gratis to free circulating libraries; and apparatus for the blind is supplied to any address at home or abroad. The guiding principle is the collection and diffusion of knowledge that will help the blind to lead normal lives and encourage them to take interest in, and to practice, all possible professions, arts, sciences and recreations. Since 1916, more than 1,700,000 publications have been issued, including books of all kinds and many periodicals. The braille manuscript department supplies blind students at the shortest possible notice with braille transcriptions of special books required for their studies, and helps to establish a blind students' library. All the copying work is done by honorary volunteers. The work of the music department includes the production and publication of music and musical textbooks in braille, the publication of the works of British blind composers, the organization of concerts and recitals, and the promotion of the general interests of blind musicians. During the year, more than 8,500 music volumes and pamphlets were produced. In carrying out its many activities, the institute employs, whenever possible, blind men and women. At the close of the financial year, the institute's blind employees numbered 286. In many cases it would hardly be possible to carry on the activities with the same measure of success without the help of the blind. Massage is declared to be an eminently suitable

profession for the educated blind of both sexes. Both men and women are trained at the school of massage, and a visit to the school when a class is in progress, with the blind students and the blind instructor (who passed first in all England in his examinations in competition with the sighted) is something to be remembered.

PARIS

(From Our Regular Correspondent)

Oct. 3, 1924.

The International Institute of Intellectual Cooperation

The commission charged with the examination of the report on intellectual cooperation has adopted a resolution accepting the offer of France for the creation of an international institute of intellectual cooperation (The Journal, Sept. 13, 1924, p. 856). Mr. Charlton, delegate from Australia, desirous of safeguarding the interests of the League of Nations, urged the commission not to accept the offer France had made, since the country in which the seat of the institute should be established would become, to a certain extent, the center of civilization. The only solution possible, as it seemed to Charlton, would be the creation at Geneva of a truly international central institute, alongside the seat of the League of Nations. The Australian delegate feared, furthermore, that the creation of the institute at Paris would cause expenditures which the subvention of the French government would not cover. M. Avenol, general secretary of the League of Nations, assured the commission of the contrary, it being provided that the commission of control should have charge of the expenditures of the institute. Mr. Murray, delegate from England, while sharing, in principle, the opinion of Charlton, referred to the circumstances under which the French government had made its offer. The League of Nations had refused to grant the commission on intellectual cooperation the appropriation it required. In its appeal to the members of the League of Nations, the commission received only one reply—that of France. Consequently, Murray held that its offer could not well be refused.

Physical Education of the Young

The question has been much discussed, in recent years, as to the responsibility for the physical education of the young. Is the minister of public instruction responsible in view of the fact that it would seem that his authority should extend over all who attend school; or must the army shoulder the burden, since it later will receive the young men as recruits in its ranks and has an interest in their physical training, whether through sports or otherwise, in order that, after a few weeks' special drill, they may be transformed into soldiers able to resist an enemy? The minister of public instruction is not—for the time being, at least—in a position to take care of physical education. Consequently, it has been necessary to entrust such instruction to the army, which has at its disposal a more or less adequate corps of instructors, whose activities have begun to be felt in more than 18,000 primary schools, in upward of 400 secondary schools, and in several thousand athletic and other societies approved by the government.

Tuberculosis and Psychoses in Teachers

The law of April 30, 1921, provides that teachers affected with "open tuberculosis" or "mental diseases" are entitled to receive a leave of absence of long duration. The text of the law is, however, far from satisfactory, and Dr. Doléris, member of the chamber of deputies, has drawn up a report with regard to the modifications that he thinks are needed. With reference to tuberculosis, the law requires that an "open tuberculosis" be present in order that the leave of absence may be granted. Eminent phthisiologists, however, declare that the absence of bacilli in the sputum does not justify us in rejecting absolutely the diagnosis of tuberculosis. Consequently, in cases in which the search for tubercle bacilli remains negative but in which the clinical evidence points strongly toward the presence of tuberculosis, such diagnosis may be considered valid, provided it is endorsed, after examination, by several medical experts (whether independent physicians or members of commissions). Doléris proposes that the expression "open tuberculosis" occurring in the law be replaced by "active, open or closed tuberculosis," which would be more in accordance with our present conceptions. Doléris recommended also that teachers suspected of tuberculosis be required to submit to periodic medical examinations. It is evident, moreover, that a compulsory examination puts on the state the obligation of treating these patients in a sanatorium or of furnishing them with the necessary funds with which they can provide treatment for themselves.

The same law provides that teachers affected with "mental diseases" may benefit from the same favors. But the words "mental diseases" presuppose a confirmed and definite mental disorder, and they have, as commonly understood, a bad or embarrassing sound. Doléris suggests that they be replaced by "temporary psychic disorders."

If Doléris' proposals are adopted, they will necessitate the expenditure of considerable sums of money. So far, it is true, the number of functionaries who have taken advantage of the law has been small: 0.5 per cent. for tuberculosis and 0.36 per cent. for psychoses. But these figures will increase notably if the obligation, and, more especially, the opportunity of taking proper care of oneself, should become realized. However, as Doléris remarks, the money needed to cover the expenses of such care should not be taken solely from the appropriations for public instruction. The ministry of labor and hygiene and the funds established for the crusade against tuberculosis should aid (temporarily, at least) in such safeguarding measures.

Alien Patients in the Hospitals of Paris

Dr. Berthoumeau has published in the *Presse médicale* some interesting statistics on the number of foreigners admitted to the hospitals of Paris. Of 2,170 persons admitted to the Asile national des convalescents, which receives almost exclusively patients coming from the hospitals of Paris, 202 were foreigners, or 9.4 per cent. Among these there were: 53 Italians, 32 Belgians, 29 Poles, 18 Swiss, 16 Spaniards, 15 Russians, 9 Turks, 6 Luxemburgers, 4 Germans, and others.

To this list of foreigners may be added fifty-one patients from French colonies, for, while the latter must not be considered foreigners, we cannot, at least from the pathogenic point of view, regard them as patients born on the soil of France. If these fifty-one patients are added to the 202 mentioned, the percentage is 14.11. Before the war, the percentage of foreigners hospitalized was only 5.06. The number has therefore almost trebled.

Berthoumeau states that this extra load, which the public charity services are compelled to bear, might be considered an obligation, heavy but ineluctable, if these foreigners had come to Paris to work and had added the strength of their arms to the French supply of labor, which, owing to the destruction of the war and the necessity of restoring the devastated regions, is inadequate to the task. It is perfectly evident that, in exchange for services rendered, ordinary sentiments of humanity would make it incumbent on us to restore to health such of the foreigners as had become temporarily incapacitated through accident, disease or overwork. But it remains to be shown that these foreigners really perform an effective amount of work. Examination of the record cards of some thirty foreigners being treated in his service has convinced Berthoumeau that conditions are not so ideal.

Many of these supposed workmen are, in reality, social outcasts and are quite undesirable guests; others are loafers and ne'er-do-wells, attracted hither by the gay life of the metropolis. Berthoumeau suggests that, when these foreigners enter on French soil, they be subjected to a medical examination with a view to eliminating the sick, the good-for-nothings and the undesirables in general. It would be a good thing, too, if they were prohibited from seeking work in the Paris region until after they had spent several months in some other part of France, which is a necessary preparation to acclimatize them, as it were, and render them familiar with a more intensive life than they are accustomed to.

Alien Patients in the Psychopathic Hospitals

In the current number of the *Annales médico-psychologiques*, Dr. A. Rodiet calls attention to the large number of foreigners among the mental patients hospitalized in the psychopathic hospitals of Paris and its environs. Rodiet states that he had admitted eighty-four foreigners to his service in the Ville-Evrard asylum, during 1923: Poles, Germans, Belgians, Englishmen, and especially, Turks, Spaniards and Italians.

In addition, in 1922, 182 foreigners and, in 1923, 211 were examined by alienists, some of whom were committed to the special infirmary connected with the prefecture of police as the results of scandalous conduct or misdemeanors on the street; 282 foreign mental patients have been interned.

Rodiet referred to the very rigorous protective measures adopted by the United States with respect to immigrants, and recommended that at least the entry into the country of foreigners who may become mental patients and a burden to the state be prevented. Immediately after his arrival in France, the immigrant should be subjected to a medical examination, which would eliminate social outcasts and defective and unbalanced persons. Before this examination is made, immigrants should be asked to show their papers, which should include a medical record card or record book, which should mention mental disorders, if there have been such, together with previous commitments to asylums in their native country or the country whence they have come. Especially when the immigrant does not speak French and suspicions are aroused as to his mental state, he should be strictly prohibited from entering France. With regard to those who are arrested for misdemeanors or scandalous conduct on the public streets, deportation should follow without delay the examination at the special infirmary, when the outcome points to an unbalanced mental state, even though transitory. If a longer observation seems to be needed, the patient should be transported to an asylum near the frontiers of Spain, Italy or Germany, as the case may be, so that the patient may easily return to the country whence he came, after his dismissal from the asylum.

Help for Disabled Veterans

The Société française de secours aux blessés militaires, one of the three societies constituting the French Red Cross, held recently its general assembly. From its annual report it appears that the society controls at present sixty-nine dispensaries and schools for nurses, many of which were established during the past year. An order of the minister of war has opened the hospitals to the pupil nurses of the society, who will thus be able to get the regular hospital training. The society has staffs of nurses in a large number of military hospitals in Paris, Lyons, Versailles, Colmar, Morocco, Syria and elsewhere. In addition, it has homes for convalescents functioning at Mont-des Oiseaux (Côte d'Azur), Vichy and at Salé (Morocco).

For the crusade against tuberculosis, the society has dispensaries, several sanatoriums, two preventoriums and a summer colony for children in a plateau region (1,100 meters altitude).

The consultation centers for babies, founded by the society, give aid to mothers by teaching them how to give to their children the best hygienic care. Where consultation centers have been established, infant mortality often falls from 10 to 20 per cent., and always at least 5 per cent.

Congress of Alienists and Neurologists

The coming session of the congress of alienists and neurologists of France and French-speaking countries will be held at Paris, May 28 to June 2, 1925, under the chairmanship of Dr. Anglade, head physician of the Château-Picon asylum at Bordeaux. These topics have been chosen for discussion: the tardy cure of mental diseases, by Dr. Jean Robert, medical director of the asylum at Auch; familial encephalopathies in children, by Dr. O. Crouzon, physician to the hospitals of Paris and president of the Société de neurologie of Paris; the medicolegal aspects of civilian cases of intellectual enfeeblement, by Dr. M. Briand, head physician of the asylums of the department of the Seine.

At about the same time, several other scientific conventions of interest to neurologists and psychiatrists will be held: the meeting of the Société médico-psychologique; the congress of legal medicine, May 25-28; the celebration of the centenary of Charcot; the twenty-fifth anniversary of the foundation of the Société de neurologie of Paris, and the Réunion neurologique internationale annuelle (June 2-6).

In response to an invitation from the Swiss psychiatrists, the general assembly of the congress of alienists and neurologists has decided to hold the 1926 session in Switzerland. This session will coincide with the celebration of the centenary of Pinel, under the chairmanship of one of his descendants, M. René Semelaigne.

Death of Prof. A. Lacassagne

The death of Prof. A. Lacassagne, aged 81, from the results of an automobile accident that occurred six months ago, has been announced. The deceased was born at Cahors, in 1843. He served for a time in the army medical corps; became agrégé professor at the Ecole d'application de médecine et de pharmacie militaires in Val-de-Grâce, whence he was summoned to occupy the chair of legal medicine at the Faculté de médecine in Lyons. His researches on normal and criminal anthropology and on scientific police administration, and his controversy with Lombroso on the subject of the "born criminal" created for him an important reputation not only in legal medicine but also in criminology. He founded, in 1886, with the collaboration of Dr. A. Bournet, the *Archives d'anthropologie criminelle*, which was reorganized in 1893 with Gabriel Tarde in charge of the scientific section, while Lacassagne reserved for himself the management of the biologic section. At Lyons he founded also an excellent museum of legal medicine.

In 1912, Lacassagne retired from active work. He had collected a good-sized library (more than 12,000 volumes) containing mainly books on his special field of study. This library he presented in 1921 to the city of Lyons. In his later years, he wrote a book that met with great success, La verte vieillesse (green old age). Since 1909 he had been an *associé national* of the Academy of Medicine. He was also a corresponding member of the Academie des sciences morales et politiques. He prepared also a handbook of legal medicine in collaboration with Prof. E. Martin, who succeeded him in his chair at the Faculté de médecine of Lyons; also a vade mecum for the medicolegal expert in collaboration with Professor Thoinot.

By a clause in his will, Lacassagne requested that a necropsy on his body be made.

BERLIN

(From Our Regular Correspondent)

Sept. 27, 1924.

Tasks and Problems of the Physiology of Work

Professor Atzler, department head in the Emperor William Institute for the Physiology of Work, in Berlin, gave an interesting address in Innsbruck recently on the tasks and problems of the physiology of work, which was then published in the *Deutsche medizinische Wochenschrift*. On the basis of the researches of the Swedish ethnologist Lundborg, Atzler emphasizes that the peasant or agricultural population and the middle class of the towns and cities constitute the most important elements of a healthy national life. The leading strata of society have their origin in these two elements. However, as industrialization increases, the middle class tends to deteriorate. With the increase of wealth among all classes, the birth rate falls, particularly among the representatives of the middle class in the cities, and the ranks of the proletariat are increased. The fact that the dangers of overtopping industrialism are beginning to be recognized is evidenced in almost all states in which the industries are highly developed by the interest that physiologists are showing in a study of the physiologic laws of work. The first impulse to this study was given by Taylor, an American. While his system is excellent in many ways, it has the disadvantage or defect that he endeavors to increase production by the application of more intense rather than more rational methods. He seeks to compensate, as far as possible, for the monotony of work by the payment of high wages, but his system does not promote the moral and cultural development of the workman; in fact, it tends rather to depress such development. It is in accordance with this effect that complaints are heard in America of workmen breaking down or wearing out after a few years. In contrast with the city workman, the agricultural worker retains his strength up to old age. Too much emphasis must not be laid on increased production. It is equally important that the welfare of the workman from all angles be considered. In accordance with this view, therefore, in every method of procedure, the question should be raised as to how the maximal production can be attained with a minimum of energy expenditure. All means of investigation and examination should be employed to determine in advance, if possible, whether a workman is physically and mentally fitted for a given labor process. Atzler recommends periodic examinations of workmen—at short intervals at first, later at longer intervals.

In the Institute for the Physiology of Work, Atzler has taken on himself the task of discovering through experimentation the most rational methods of labor performance. His point of departure has been the observation that the functional capacity of the blood vessels of the lower extremities constitutes an important physiologic test of a subject's adaptability for work. On changing from the recumbent to the standing posture, these blood vessels are subjected to a greater hydrostatic pressure. If the veins are dilated, a considerable amount of blood settles in the lower extremities. The organs of the upper part of the body, especially the heart and the brain, then suffer for lack of blood supply. In a person with normal blood vessels, the muscles that encircle the arteries contract and obviate the danger of an unfavorable blood distribution. By plethysmographic methods, Atzler endeavored to determine in healthy subjects the changes that the volume of the foot and the lower leg undergoes under the influence of hydrostatic pressure. Persons with poor veins should not be employed for work requiring the operator to stand for long periods. In a workman with normal veins, measures should be taken to reduce to a minimum the disturbances of blood distribution. This end can be attained through the proper arrangement of rest periods or by the introduction of muscular movements. Every kind of work in a factory is made up of or accomplished through an aggregate of elementary movements. Atzler was able to observe from thirty to forty such primary elementary movements, through the combination of which even the most complicated movement can be produced in much the same manner as the vocabulary of a language consists of the letters of the alphabet. From the physiologic standpoint, the problem of rationalization is solved when we have established the optimal working conditions for every element involved in labor. A comparison is made between the amount of external labor performed under various conditions and the energy expended by the organism. Those working conditions are the most favorable under which a given task is performed with the least expenditure of energy. Accordingly, some type of mechanism must be invented that enables us to express in figures the amount of external labor performed. In illustration of this point, Atzler discussed the results secured in connection with his investigations on the wheel and axle and the raising of weights. On the basis of these findings, he developed the following general rules:

1. The amount of muscle available for a given task must be in proper proportion to the work to be done. For hard work, therefore, strong groups of muscles, and for easy work weaker groups must be used. For example, a bicycle propelled by the strong leg muscles is a better vehicle with which to make speed than an invalid's wheel chair propelled by hand.

2. For the performance of continuous work in constantly moving systems, the motion must be distributed through something having great inertia; for example, a heavy grindstone.

3. The proportion of "empty" movement, that is, bodily movement without the performance of external labor, should not be too great. For instance, it is more advantageous to use a windlass in raising bricks to an elevated platform than it is to carry them up in a hod.

4. "Empty" movements should not, however, be entirely eliminated, for the reason that they afford the muscles an opportunity to relax. If the proportion of "empty" movements is too low with respect to the total amount of work accomplished, the musles become overfatigued.

5. Work should be done in a rapid tempo. It is usually better to work quickly and to introduce rest periods than the reverse. Dyspnea, palpitation of the heart and increase of body temperature in tasks requiring prolonged exertion are, in healthy persons, evidence that the tempo is too rapid or the strain too great.

6. The expenditure of energy required for the retention of a position necessary for the execution of a task must be reduced to a minimum; for instance, if an operator uses mainly his arms or hands, he should be provided an opportunity to sit, if feasible; or, if an arm must be kept extended for long periods of time, some support for the arm should be furnished.

7. In work of a monotonous nature, the group of muscles used should be rested from time to time, and another group employed. Thus, the blood circulation will be stimulated and fatigue will be obviated. For instance, in doing handiwork requiring a sitting posture, a person will do well to rise from time to time and stretch the leg muscles (fresh material may be brought). Thus, the sense of fatigue will be postponed.

8. Static labor (the holding of weights, for instance) should be reduced to the lowest minimum. For such performance, the consumption of energy may be very great.

9. Heavy burdens should be carried in such a manner that their center of gravity lies vertically over the member of the body bearing the weight.

10. The clothing should be of such a nature as not to impede the movements of the body. Too heavy clothing may cause a useless expenditure of energy.

Progressive Paralysis

Before the Münchener aerztliche Verein, Professor Bumke, the new director of the psychiatric clinic, recently gave an interesting address on progressive paralysis. He holds that progressive paralysis did not appear for centuries after syphilis. In the Leipzig clinic, a decrease of paralysis since 1918 has been noted. There has been a decrease of deaths from this cause since 1911. No satisfactory explanation for this phenomenon has as yet been discovered. The war, the use of arsphenamin and the like can scarcely be taken as the causes. In other cities the same facts have been observed; in some cities, however, there has been no decrease in paralysis cases, but rather an increase. Bumke thinks it is possible that there is an endemic difference in the virulence of the spirochetes in the various cities. It seems to Bumke that the more violent forms of paralysis are becoming more rare and that therefore the differentiation between paralysis and cerebral syphilis is becoming more and more difficult. It is definitely established that tabes never occurs except after syphilis, and that only a certain proportion of tabetic subjects are affected with progressive paralysis. This may be due to (1) peculiar qualities of the spirochetes; (2) constitution of the person attacked, or (3) other exogenous damaging influences in addition to a spirochetal infection. It has been said that only syphilitic subjects who are at the same time alcoholics develop progressive paralysis, but that is not true. War, mental overexertion, influences of modern civilization with its unnatural modes of living, and differences in race characteristics cannot be considered the inciting causes of mental disease. Whether early treatment of syphilis has a special bearing on the appearance of progressive paralysis is very doubtful, for those who receive no treatment develop progressive paralysis, and it often happens that sufferers from progressive paralysis are not aware that they have syphilis. Those who are treated may likewise develop progressive paralysis, since the secondary manifestations are thereby eliminated and the possibility of mental disease is increased. The incubation period becomes shorter and shorter, the later in life that a person becomes infected. Bumke thinks this is due to the fact that the resistance of the body to progressive paralysis becomes less with increasing age. According to Plaut, the neurotropic character of the spirochetes is acquired in the body of the patient, doubtless at a time when the patient is no longer susceptible of infection. It depends thus on the relationship of the body to the spirochete. According to Hauptmann's hypothesis, those patients develop progressive paralysis who, in the secondary stage, are unable to cope successfully with their syphilitic infection. Marked secondary manifestations are always to be taken as evidence of constitutional inferiority. In every case of progressive paralysis, we must distinguish between the inflammatory processes in the brain, caused by the penetration of the spirochetes, and the dementia, brought about by the destruction of the tissues resulting from their toxic influence. In nine out of twenty cases, Bumke noted considerable improvement from combined mercury and neo-arsphenamin treatment. Wagner von Jauregg reports favorable results from malaria treatment. In Leipzig, no cures were effected by malaria treatment, but marked amelioration of the condition was brought about. The evaluation of results depends to a great extent on the type of the patients chosen for the treatment. In the case of persons on whom, professionally and socially, great demands are made, the results are seldom satisfactory. But, with patients who live on a more primitive plane, it is different. Strictly speaking, Bumke has never observed a cure; nor could he find in the literature any account of a complete cure.

Marriages

JOSEPH E. WHEELER, Jefferson Barracks, Mo., to Miss Alline Maxville of Tupelo, Miss., September 25, at St. Louis.

JAMES MANSFIELD BAILEY, Nashville, Tenn., to Miss Ethel Ray Stoermer of Owensboro, Ky., at Richmond, Va., July 10.

HAROLD S. DAVIDSON to Miss Wanda Elizabeth Berger, both of Atlantic City, N. J., at New York, October 8.

RICHARD COTTER GAMBLE, Chicago, to Miss Vera Theresa Fusselman of Livingston, Mont., September 24.

PATRICK H. MCGOWAN, Schuyler, Neb., to Miss Marguerite Costello of Council Bluffs, Iowa, October 1.

WILLIAM MILAS DUNN, Atlanta, Ga., to Miss Clara Elizabeth Whips of Chattanooga, Tenn., July 12.

LIEN OTIS SIMENSTAD, Osceola, Wis., to Miss Agnes M. Berget of Warren, Minn., September 24.

JAMES HUGH EARLEY to Miss Kathleen Elizabeth Ready, both of Washington, D. C., June 24.

HAROLD M. COON, Stevens Point, Wis., to Miss Mary Morrissey of Joliet, Ill., September 9.

TRACY JACKSON PUTNAM, Boston, to Dr. Irmarita Kellers of Montclair, N. J., October 11.

HAROLD J. BYRON, Pittsburgh to Miss Mary Isabel Langdon of Philadelphia in August.

EARL MATHEW WOODSON, Poteau, Okla., to Miss Faye Scott of Atoka, at Tulsa, July 5.

WILLIAM H. JONES, JR., to Miss Ruth Aultmiller, both of Hazleton, Pa., in August.

JOSEPH ELMER O'BRIEN to Miss Mae M. Getz, both of Erie, Pa., August 14.

Deaths

William Henry B. Aikins, Toronto, Ont., Canada; University of Toronto Faculty of Medicine, 1881; L.R.C.P., London, England, 1881; past president of the Toronto Academy of Medicine, and the American Radium Society; secretary for Canada of the International Medical Congress, Lisbon, 1916; on the staffs of the Toronto General Hospital, the Toronto Hospital for Incurables, the Grace Hospital, Toronto, and the King Edward Sanatorium for Consumptives, Weston; an editor of the *Canadian Practitioner;* aged 65; died suddenly, October 2, of angina pectoris.

Zachary Taylor Emery ✠ White Plains, N. Y.; Detroit (Mich.) Medical College, 1874; Long Island College Hospital, Brooklyn, 1874; president of the Kings County Medical Society, 1891-1892; health commissioner of Brooklyn, 1894-1897; formerly on the staff of the Long Island College Hospital, Brooklyn; medical director of the Manhattan Life Insurance Company, New York, since 1895; aged 77; died, October 7.

Eugene Coleman Savidge ✠ New York; Medical Department of the University of the City of New York, 1891; formerly on the staffs of the Roosevelt, St. Mark's and Sloane Maternity hospitals, New York, and the Francis Parker Hospital, New Brunswick, N. J.; author of "Unclassified Diseases," "Selective Involution" and other works; aged 61; died, October 9, at the Northeast Deaconess Hospital, Boston.

Joseph Harry Venn, Memphis, Tenn.; University of Pennsylvania Schol of Medicine, Philadelphia, 1894; member of the Tennessee State Medical Association; formerly instructor and professor of physics and chemistry at the Memphis Hospital Medical College; aged 54; died, October 8, of heart disease.

Cyrus T. Foster, Rock Island, Ill.; Keokuk (Iowa) Medical College, 1897; member of the Illinois State Medical Society; formerly county and city physician; aged 53; on the staff of St. Anthony's Hospital, where he died, October 9, of wounds received when shot by bandits.

Augustus Simon Gilles, Winnebago, Wis.; Wisconsin College of Physicians and Surgeons, Milwaukee, 1897; member of the State Medical Society of Wisconsin; for seven years on the staff of the Northern Hospital for the Insane; aged 52; died, October 7.

Lorenzo P. McCray, Clymer, N. Y.; University of Buffalo Department of Medicine, 1889; member of the Medical

Society of the State of New York; health officer of Clymer; aged 73; died, September 30, at the Jamestown (N. Y.) General Hospital.

William Lloyd Thompson, Sheboygan, Wis.; College of Physicians and Surgeons, Baltimore, 1913; formerly member of the state board of medical examiners; president of the board of education; aged 51; died suddenly, October 5, of heart disease.

Nancy Bell Craighead ✠ Pittsburgh; Woman's Medical College of Pennsylvania, Philadelphia, 1902; member of the American Academy of Ophthalmology and Oto-Laryngology; aged 48; died, September 1, at Strasburg, Pa., of carcinoma of the lung.

Horace H. Witherstine ✠ Rochester, Minn.; Rush Medical College, Chicago, 1886; for many years mayor of Rochester; formerly state senator; aged 72; was instantly killed, October 2, when the automobile in which he was driving overturned.

Erwin Bowden McMorries, Clinton, Ky.; St. Louis (Mo.) College of Physicians and Surgeons, 1904; member of the Kentucky State Medical Association; member of the county board of health; aged 43; died, October 1, of pneumonia.

Frank W. Ernest Wilson, Niagara Falls, Ont., Canada; McGill University Faculty of Medicine, Montreal, Que., 1897; served with the Canadian Army Medical Corps, in France, during the World War; aged 50; died, September 23.

Samuel B. Miller, Los Angeles; Rush Medical College, Chicago, 1878; formerly secretary of the Wyoming State Board of Medical Examiners; at one time physician of Albany County, Wyo.; aged 69; died, October 2.

Michael A. Flinn, Portland, Ore.; Willamette University Medical Department, Salem, 1872; formerly instructor of physiology at the University of Oregon Medical School, Portland; aged 83; died, September 28.

John Jefferson Gee, Chattanooga, Tenn.; University of Tennessee College of Medicine, Memphis, 1902; member of the Tennessee State Medical Association; aged 51; died, October 2, at a local hospital, of heart disease.

Thomas William B. Busche, Ridgewood, N. J.; Medical Department of the University of the City of New York, 1877; one of the founders of the New York Eye and Ear Infirmary; aged 71; died, October 4.

Edward H. Gingrich ✠ Lebanon, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1895; for twenty-seven years city health officer; aged 58; died, October 6, following a long illness.

Lawrence D. Byron, Presho, S. D.; University of Michigan Medical School, Ann Arbor, 1886; formerly physician to the Lower Bruele Indian School; aged 57; died, September 30, of cerebral hemorrhage.

Jasper Newton Markle, Anaheim, Calif.; College of Physicians and Surgeons, Keokuk, Iowa, 1870; also a druggist; Civil War veteran; formerly a practitioner in Illinois; aged 85; died in September.

Henry T. Whitney, Inghok, China; Medical Department of the University of the City of New York, 1874; for forty-three years medical missionary; aged 75; died, September 14, at Glendale, Calif.

Albert William Strickler ✠ Scottdale, Pa.; Jefferson Medical College of Philadelphia, 1871; for many years member of the school board; aged 77; died, September 30, following a long illness.

Frank Hill Campbell, Powers, Ore.; University of Oregon Medical School, Portland, 1921; aged 29; died, September 25, at the Good Samaritan Hospital, Portland, of chronic nephritis.

John R. Nisbet, Naperville, Ga.; Georgia College of Eclectic Medicine and Surgery, 1887; formerly member of the state legislature; aged 72; died, October 4, following a long illness.

Jacob W. Hart, Huntsville, Ont., Canada; Trinity Medical College, Toronto, 1886; for many years medical officer of health; aged 67; died, August 18, at Toronto, of peritonitis.

Liston L. Johnson, Fletcher, N. C.; College of Physicians and Surgeons, Baltimore, 1874; aged 73; died, October 2, at a hospital in Hendersonville, following a long illness.

Fred Luther Sievers, Yamacraw, Ky.; University of Louisville School of Medicine, 1912; aged 38; died, October 1, at the Somerset (Ky.) General Hospital, of pneumonia.

Arthur Hanley Keller, Paris, Ky.; Louisville Medical College, 1881; member of the Kentucky State Medical Association; city health officer; aged 64; died, October 5.

Francis James Ewing, Vancouver, B. C., Canada; Trinity Medical College, Toronto, Ont., 1890; aged 58; died, June 28, of chronic myocarditis and coronary sclerosis.

George W. Payne, Petty, Texas (licensed, Texas, under the act of 1907); member of the State Medical Association of Texas; aged 48; died recently, of pneumonia.

Edward Franklin Benhart ✠ North English, Iowa; State University of Iowa College of Medicine, Iowa City, 1921; aged 27; died, September 30, at Iowa City.

Charles W. Briesenick, Whitney, Pa.; Medico-Chirurgical College of Philadelphia, 1888; also a druggist; aged 68; died, September 25, following a long illness.

James Kelso Creighton, Stettler, Alta., Canada; University of Western Ontario Medical School, London, 1891; aged 56; died recently, of cerebral hemorrhage.

Ulric Antoine Belanger, Mastai, Que., Canada; University of Montreal Medical Faculty, 1871; aged 76; died, August 25, at Gifford, of chronic endocarditis.

Emerson Franklin Glendinning, Hamilton, Ont., Canada; Trinity Medical College, Toronto, 1904; aged 47; died, September 3, of cerebral hemorrhage.

Jefferson Davis Kernodle, Devol, Okla.; Kansas City (Mo.) Medical College, 1894; aged 61; died, September 28, at Grand View, Mo., of angina pectoris.

Edwin Ralph Wilson ✠ Sumter, S. C.; Medical College of the State of South Carolina, 1899; aged 47; died, September 29, of accidental asphyxiation.

John N. McClendon, Groveton, Texas; Barnes Medical College, St. Louis, 1905; aged 49; died recently, of an overdose of morphine taken accidently.

William Johnson Keller ✠ Spartanburg, S. C.; Vanderbilt University Medical Department, Nashville, Tenn., 1895; aged 55; died suddenly, October 2.

Sophia Reed Peabody, Rockland, Mass.; Tufts College Medical School, Boston, 1897; aged 53; died suddenly, September 23, of heart disease.

Richard D. Wilson, Holly, Colo.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1894; aged 63; died, September 27.

John Christal, San Francisco; L.R.C.S., Ireland, 1875; M.R.C.P., Ireland, 1884; aged 77; died, September 29, of chronic myocarditis.

Park Benjamin Leason, Sheboygan Falls, Wis.; Rush Medical College, Chicago, 1884; aged 72; died, September 28, of diabetes mellitus.

Ira Humphrey Prouty, Hartford, Conn.; Johns Hopkins University Medical Department, Baltimore, 1911; aged 39; died, October 8.

Luther A. Potter ✠ Superior, Wis.; Detroit (Mich.) Medical College, 1881; aged 66; died, September 28, of carcinoma of the prostate.

Frederick Lincoln Grahlfs, Brooklyn; Dartmouth Medical School, Hanover, N. H., 1894; aged 62; died, October 7, of heart disease.

James Francis Vanderburgh, Merritton, Ont., Canada; University of Toronto Faculty of Medicine, 1878; aged 73; died, August 29.

Moyses Rogers Simmons, Beverly, Mass.; Medical School of Harvard University, Boston, 1882; aged 66; died, September 28.

William O. Smith, Crossville, Ill.; Eclectic Medical Institute, Cincinnati, 1878; aged 74; died, August 29, of chronic nephritis.

Johann H. Jessen, Haigler, Neb.; University of Nebraska College of Medicine, Omaha, 1897; aged 54; died, September 21.

John Carson Woods, Waco, Texas; Charity Hospital Medical College, New Orleans, 1875; aged 75; died, September 26.

Amelia Wright, Warwick, N. Y.; New York Medical College and Hospital for Women, 1874; aged 89; died, October 7.

William V. Garrett, Atlanta, Ga.; Atlanta Medical College, 1894; aged 56; died, September 29, at a local sanatorium.

Henry Noble Rutledge, Cupar, Sask., Canada; Trinity Medical College, Toronto, Ont., 1894; died, August 26.

Reuben Milton Cochran, Richton, Miss.; Barnes Medical College, St. Louis, 1903; aged 46; died recently.

John Wesley Comp, Edmond, Okla.; formerly member of the state legislature; aged 84; died, August 21.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

ST. JAMES OIL

A "Patent Medicine" Exploited by a "Drugless Healer" Declared a Fraud

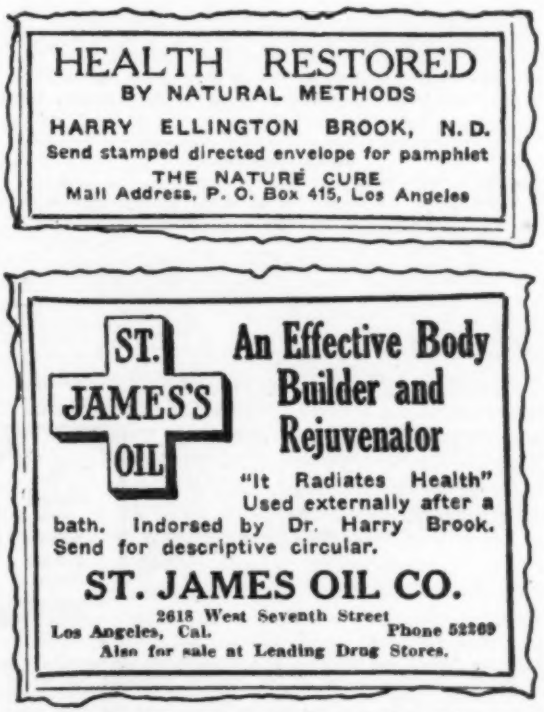
For many years, one Harry Ellington Brook conducted a department of medical and quasimedical misinformation in the Sunday Magazine Section of the Los Angeles *Times*. Brook's material attracted to this section of the *Times* the advertising of other quacks and a choice selection of "patent medicines" and medical fakers in general. Brook put after his name the letters "N.D.," which were supposed to mean "Nature Doctor"; he was also a chiropractor. In addition to conducting a department in that paper, Brook also advertised in the Los Angeles *Times* to restore health by natural methods. He was an exponent of the so-called drugless therapy, although, like many other alleged drugless therapists, he was not above exploiting a "patent medicine"—secretly—and defrauding the public in its sale.

A fraud order recently issued by the Post Office Department against Brook and the "St. James Oil Company" brings out the fact that Brook has for years been engaged in exploiting a nostrum called "Saint James's Oil," at the same time that he was inveighing against all drugs in his department in the Los Angeles *Times*. Brook died last May, but the Saint James's Oil fake was continued by his heirs, and a post office box was still retained in Brook's name. The memorandum of Judge Edgar M. Blessing, solicitor to the Post Office Department, made to the Postmaster-General recommending the issuance of a fraud order, gives in detail the Brook scheme.

It appears from the memorandum that on June 6, 1924, the Carque Pure Food Company, Inc., Otto Carque, the St. James Oil Company and Harry Ellington Brook, all of Los Angeles, were called on to show cause why a fraud order should not be issued against them. The Carque Pure Food Company, Inc., and Otto Carque filed an answer through R. B. MacNee, secretary of the concern, and there was also an answer filed by Clara Plath, as administratrix of the estate of Harry Ellington Brook, and the St. James Oil Company. The memorandum then continues:

"The business consists in the advertising and sale through the mails of a medicinal product called 'Saint James's Oil,' claimed in the literature to be a cure, or as having curative properties, in consumption, diabetes, asthma, anemia, dyspepsia, piles, quinsy, rheumatism, typhoid and typhus fever, and many other diseases and ailments; also that it is 'an effective aid in the rebuilding of the body.' The evidence shows that the St. James Oil Company was a partnership between Harry Ellington Brook, who died, May 3, 1924, and Otto Carque, the latter being also president of the Carque Pure Food Company, Inc., which latter concern under an arrangement with the St. James Oil Company manufactured, blended and bottled 'St. James's Oil.' This preparation, analysis by the Bureau of Chemistry, Department of Agrciulture, shows to be 98 per cent. mineral oil resembling liquid petrolatum, designated by Mr. Otto Carque as 'cameo neutral oil' a Standard Oil Company product. The other two per cent. consists of the volatile oils of eucalyptus and of lemon. For its services the Carque Pure Food Company has received from the St. James Oil Company a certain percentage of the profits. Harry Ellington Brook was not a doctor of medicine, but a so-called nature doctor (N.D.), and a chiropractor. The St. James Oil Company was promoted by him and the 'oil' has been prepared from a formula furnished by him.

"I find from the evidence that the Carque Pure Food Company is a duly incorporated concern; that its principal business is that of dealing in foods, such as figs, raisins, nuts, rice, and other cereals, honey, etc.; that as its president Mr. Otto Carque was a partner of Mr. Brook; it manufactured St. James's Oil and sold it only under the claims employed by Mr. Brook; that the sale of St. James's Oil constituted about two per cent. of its business; and that it has no corporate or other business connection with the St. James Oil Company other than hereinbefore indicated. In view of this showing on the part of the Carque Pure Food Company, and of its offer made in writing to absolutely discontinue and abandon the handling of St. James's Oil through the mails, it was afforded an opportunity, in order to avoid further consideration of the question of the issuance of a fraud order against it, to furnish an affidavit setting forth the fact that it had discontinued and abandoned the advertising and sale through the mails of St. James's Oil; that it would not resume such business at any time in the future, and that remittances received through the mails thereafter would be promptly returned to senders. Such affidavit was executed under date of August 15, 1924, by Otto Carque, president of the concern, and filed in this office. Under these circumstances I recommend that the names of the Carque Pure Food Company and Otto Carque be eliminated from consideration in the event of issuance of a fraud order in this case."


HEALTH RESTORED
BY NATURAL METHODS
HARRY ELLINGTON BROOK, N. D.
Send stamped directed envelope for pamphlet
THE NATURE CURE
Mail Address, P. O. Box 415, Los Angeles
ST. JAMES'S OIL
An Effective Body Builder and Rejuvenator
"It Radiates Health"
Used externally after a bath. Indorsed by Dr. Harry Brook.
Send for descriptive circular.
ST. JAMES OIL CO.
2615 West Seventh Street
Los Angeles, Cal. Phone 52289
Also for sale at Leading Drug Stores.

Two advertisements from the Sunday magazine section of the Los Angeles *Times*. Harry Ellington Brook, a chiropractor and self-styled "nature doctor," conducted for years a department of medical misinformation in the Sunday magazine section of the Los Angeles *Times*. He also advertised in the same publication his "drugless" method of curing. From another address he exploited a "patent medicine," "St. James's Oil," which the government has recently declared to be a fraud and which the Los Angeles *Times* also advertised.

Some of the claims made for St. James's Oil are quoted in the memorandum of the solicitor, and a few of these we reproduce:

"An effective aid in the rebuilding of the body."

"With reasonable attention to diet, the breathing of fresh air, and the free use of this oil, any case of disease that is curable may be cured, life prolonged, and efficiency increased."

"Cases of rheumatism are greatly benefited and (by combining some attention to diet) may be cured. . . ."

"In consumption apply cloths dipped in St. Jame's Oil to the lungs at night. It will greatly alleviate suffering."

In addition, the stuff was recommended for pneumonia, piles and corns, to say nothing of asthma and fevers. The solicitor then states that Dr. L. F. Kebler, physician and chemist in charge of Special Collaborative Investigations, Bureau of Chemistry, United States Department of Agriculture, had had analyzed and reported on St. James's Oil, discussing its alleged therapeutic value. From Dr. Kebler's report, the solicitor reached the following conclusions:

"I find the facts to be that this mixture cannot possibly 'aid in rebuilding the body.' According to the evidence in this case, mineral oils applied externally are useless; the application of a cloth saturated with this oil will not cure

sore throat; the oil will not cure corns, the cure, if any, being rather due to discontinuance of the use of tight shoes; the oil is of no value as a curative agent in cases of rheumatism; there is no basis therapeutically for the claim that the oil will cure all throat troubles and that it is almost a 'specific' for quinsy; it has no value in the treatment of consumption; the oil in and of itself will not cure piles, and its external application will not favorably affect asthmatic conditions. The evidence shows that St. James's Oil is not efficacious in the treatment of many diseases and ailments such as diabetes, anemia, or dyspepsia. It is of no value as a treatment for individuals who 'seem to be wasting away' as claimed in the literature. It is shown further that there is no 'expensive' drug in St. James's Oil, as alleged in the folder."

In closing, the solicitor explains why, although Brook is dead, there should still be a fraud order issued against his name:

"While the evidence shows that Mr. Brook died May 3, 1924, the executrix of his estate in her answer to the charges indicates her intention to continue the business, and defends claims made in the literature as to the value of the 'oil' for the reason that they are alleged to be based on Mr. Brook's

24 The Los Angeles Times [Sunday,

CARE OF THE BODY

CONDUCTED BY HARRY ELLINGTON BROOK, M. D.

HEALTH RESTORED

PROSTATE TROUBLES NEED BRAINS—NOT SURGERY

Be Natural

Eat Natural Foods

"Care of the Body" was the title of a department conducted for some years by Harry Ellington Brook in the Sunday magazine section of the Los Angeles *Times*. Brook was grossly ignorant of scientific medicine and professed to be opposed to the use of drugs. At the same time he was exploiting a fraudulent "patent medicine" under the trade name "St. James Oil Company."

own experience in 'advising sick people.' She further asserts that his 'teachings were acceptable to the public' and that articles written by him have been published regularly in a western newspaper. [The Los Angeles *Times*.—ED.] She states that 'his word has been taken everywhere as true.' I find that at the time of his death 50 letters were being received daily by Mr. Brook and Box 415 of the main post office at Los Angeles, California, is still being held in his name. The fraud order to be effective should, therefore, include the name Harry Ellington Brook, N.D."

In view of all this, Judge Blessing declared that the evidence showed that the whole thing was a scheme for obtaining money through the mails by means of false and fraudulent pretenses, representations and promises, and that he recommended that the Postmaster-General issue a fraud order against the names of St. James Oil Company and Harry Ellington Brook. The order was issued September 12, 1924.

Ergot in Enuresis.—The contraction of the bladder in the "essential" or "idiopathic" enuresis of children is a reflex contraction, due to a hypotonic condition of the unstriped muscle fiber forming the internal urethral sphincter. The exhibition of ergot would appear to be the best method of treatment, but the small number of cases so far treated does not permit of any decisive results being stated.—J. M. Smellie: *Proc. Roy. Soc. Med* **17**:47 (July) 1924.

Correspondence

FEDERALIZATION OF HEALTH ACTIVITIES

To the Editor:—The thoughts suggested by the following paragraphs, taken from a communication to THE JOURNAL (September 11, p. 861) by Dr. F. M. Wood, are worthy of discussion:

> The public health propaganda in every community is now bringing into medical practice . . . an army of untrained, hair-brained cultists and faddists, working in and through the public schools and free clinics.
>
> Free public health work now being carried on in city, state and nation is surely subversive of the best interests of the profession, and a menace to the proper practice of medicine.
>
> The Sheppard-Towner law secures free advice monthly for expectant mothers through the federal Labor Bureau. Free venereal clinics for men and women, free examinations of children in public schools, and free tuberculosis clinics complicate the picture of the gradual socialization of medicine. Is it any more right that city, state and nation should invade the field of medicine than it would be for it to take over the business of the Standard Oil Company?

I doubt whether any state department of health is in sympathy with a wholesale introduction of untrained persons into the general scheme of preventive medicine. In some communities, unfortunately, lay organizations have taken hold and obtained a firm grip on preventive health measures along various lines. It is also unfortunate and true that some of these organizations are composed largely of untrained, though none the less aggressive, persons. I think, however, that this is due to a lack of interest among physicians in such communities who have failed to accept their responsibility and have shirked membership in such organizations, which, by virtue of their medical training, should have remained entirely under their control.

In most rural communities, the local physician still remains the family friend and adviser, and when an organization of the laity assumes control and direction of purely medical matters, the physicians of that community have lost their proper position as medical advisers. Is not such loss due, at least in part, to their own inactivity?

The various "free" opportunities for obtaining physical examination and advice appear to be entirely subversive of proper respect for the local medical practitioners, but I think a closer consideration will show that any clinic, when properly conducted, tends to increase rather than decrease a local physician's prestige and practice. Such clinics have been conducted in Maryland for the last two or three years; the local physicians have had their attention called to them, their cooperation has been invited, and through the clinic they have received new patients. The baby clinics have brought many mothers to a closer consideration of the proper care of infants and children of preschool age. While these clinics have been conducted for well children, in some instances children supposedly well, applying for examination, have been found to be suffering from conditions needing medical advice and treatment; these have promptly been sent, with a record of the examination, to the attending physician. Some venereal disease clinics have been organized in communities where laboratory facilities were available, and in such places it has been found necessary to conduct treatment as well as make the diagnosis for the reason that compulsory attendance at the clinic for treatment, after the diagnosis has been made, is provided for by law. The Maryland State Department of Health, on request, supplies every physician in the state with Wassermann outfits, and maintains a laboratory for the purpose of determining positive or negative reactions. If the reaction is positive, the proper treatment is provided at a minimum cost to the attending physician, who remains in charge of the case.

Free examination of children in public schools is not so much a problem in rural districts as it may be considered in

the larger cities. In rural districts it would be practically impossible for any local physician to make such examinations in a systematic manner, tabulate the data obtained and make suitable reports to the state department of health and the school authorities, not from lack of ability but from lack of time.

It would seem logical that a trained examiner would do a more complete job in examining any number of school children than would be possible if that job was divided among several busy general practitioners, even though each of them was supplied with the same form to fill out. There is room for an honest difference of opinion as to tonsillar conditions, eye defects, nutritional defects, etc., so that with one man making the examination, while he may err, I fancy the ratio of error would be less than when it was computed on the report obtained from several less experienced examiners. In Maryland, the parents of a child having a defect are always referred to the family physician or dentist, leaving it entirely to their advice as to further remedial or operative procedure.

In a county of about 18,000 population with only three practicing dentists and from 65 to 75 per cent. of school children with defective teeth, it is obviously impossible for these three dentists to take proper care of so many children, widely scattered as they are, in many instances without means of transportation. I leave it to any one whether a traveling dental clinic in such a county would not be a godsend, even though a large proportion of the work done would cost the child only the actual cost of material used.

The free tuberculosis clinic is still another problem, but it is serving to call the attention of people to their physical conditions, which may have been considered not worth the price of a thorough examination by the family physician.

Again, let it be remembered that all persons applying for examination at these clinics are referred for treatment to the physician of their choice, with a report of the examination. Consider the number of cases of tuberculosis, incipient, moderately advanced and far advanced, which have been discovered and reported from these clinics, many of which cases have never been called to the attention of local physicians. Many have thus been directed to sanatoriums which they did not know were in existence. It would seem, then, that until something better is devised, these clinics are doing good work.

I think that all of us who endeavor to discuss these questions, with particular reference to rural communities, should consider the fact that in many such communities a physician is never called in until the patient is decidedly ill. This being the case, it would seem right and proper to continue such clinics until the public has been educated to seek local medical advice more frequently and promptly. Is it not true, after all, that, with the exception of surgical clinics, these others, in connection with the examination of school children, are really centers of information and advice, dealing not only with past and present symptoms or conditions but also with future preventive measures?

It seems to me that practicing physicians have been and are yet unwilling to take up preventive measures as now being taught in the various schools of hygiene and preventive medicine. Until the practicing physician is willing to promote preventive measures in the family in addition to his skilful application of remedies to the patient, health clinics will be a necessity.

The full-time state health officer trained in and devoted to his work provides one of the best agents to promote a closer interest in public health matters among both the medical profession and the laity. The state and county health officer has usually had experience in the general practice of medicine, and this experience, in connection with his training in public health matters, renders him capable of being a valuable assistant to his medical colleagues, not only individually but in having the large resources of the state department of health back of him to render further assistance in preventing epidemics or stamping them out of existence when they assume proportion too great for one man to handle.

One solution to all these problems appears to be well worthy of consideration; i. e., a strong, well coordinated effort to provide full-time county health officers, chosen for their ability rather than their political affiliations, paid adequately, and given full authority.

It does not require much imagination to picture a state with a corps of full-time county health officers, each of them working along similar lines and developing within their own jurisdiction ways and means for producing the same results that we are now struggling to obtain through county clinics.

Being paid for full-time service, the county health officer will stand in the community and in his county as the chief medical adviser and director of all activities concerning the prevention of disease. He will be able through his own personality, his local board of health, and more than likely a strong county public health association to control sporadic lay activities as well as possible invasion of his county by cultists.

S. J. FORT, M.D., La Plata, Md.
Deputy State Health Officer.

"ACCIDENTAL MALARIA INFECTION IN SYPHILIS OF THE BRAIN"

To the Editor:—The article of Dr. Laurence E. Hines on "Accidental Malarial Infection in Syphilis of the Brain" (THE JOURNAL, October 11) leaves a wrong impression on the mind of the reader, since it criticizes a method of treatment not according to the facts. Professor Wagner-Jauregg, who inaugurated the malaria treatment of general paralysis (THE JOURNAL, Aug. 4, 1923, p. 405; *Medizinische Wochenschrift*, No. 13, 1924) expressly emphasizes the point that the blood of patients suffering from estivo-autumnal fever should never be used, but only that of tertian malaria. The fever induced by inoculation of tertian malarial blood is promptly controlled by quinin, the plasmodia disappearing after the administration of 1 gm. of the drug. Arsphenamin is given simultaneously with the quinin treatment. The reports from abroad are very favorable with this method of treatment; Wagner-Jauregg and Pilcz report 100 per cent. of cures and remissions in the early cases.

The case reported by Dr. Hines has no relation to the Wagner-Jauregg method of treatment, since his patient suffered from a naturally acquired malaria, which was of the estivo-autumnal type. His patient received no quinin and arsphenamin as practiced in the malarial treatment of quaternary syphilis; therefore it should have no bearing on the method of Wagner-Jauregg.

MAURICE BUCHSBAUM, M.D., Gary, Ind.

THE MILITARY STATUS OF DR. LEE ALEXANDER STONE

To the Editor:—Owing to a clerical error (misfiling of index card), the appointment of Dr. Lee Alexander Stone as major in the Medical Officers' Reserve Corps to rank from May 16, 1919, and his continuance in that grade until transferred to the Military Intelligence Officers' Reserve Corps, April 5, 1923, was not credited in my communication to THE JOURNAL, September 27, p. 1021.

While the statement in the last paragraph of my letter, "He did not reenter the medical service, and so far as the Medical Department is concerned, has had no connection with it since his discharge," is inaccurate, Dr. Stone ceased to be an officer of the Medical Section of the Officers' Reserve

Corps, April 5, 1923, by transfer to the Military Intelligence, Officers' Reserve Corps; and was not, therefore, an officer of the Medical Department of the Army at the time of publication of his article.

The omission of Dr. Stone's record as an officer of the Medical Section, Officers' Reserve Corps, with the grade of major, from May 16, 1919, to April 25, 1923, is regretted. This connection, however, does not alter the fact that the introductory statement appearing with the article of which Dr. Stone was the author and which appeared in the July number of *Physical Culture* is inaccurate and misleading, when it represents Dr. Stone as "a surgeon in the U. S. Army, with the rank of Lieut. Colonel."

It is only my desire to correct the erroneous impression which the introductory comment to Dr. Stone's article creates that he writes as "a surgeon in the United States Army."

M. W. IRELAND, M.D., Washington, D. C.
Surgeon General, U. S. Army.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

OBLIGATION OF PHYSICIAN TO RESPOND TO CALLS

To the Editor:—I shall appreciate answers to the following questions, which have been submitted to our board by a physician in this state: 1. Can a physician be compelled to respond to a call, regardless of the nature of the case? 2. If there is only one physician in a community, does he incur any legal liability if he refuses to respond to a call? 3. If a would-be patient calls a physician to whom he is already indebted, and the physician refuses to respond, is the physician legally liable for any injury the patient may suffer by reason of such refusal?

———, Raleigh, N. C.

ANSWER.—1. A physician who has not entered on the treatment of a case incurs no legal liability by refusing to respond to a call, unless he has previously entered into a binding agreement to care for the patient as an individual, as is commonly done in obstetric cases, or to treat patients of the general class to which the patient belongs, as is not unusual in industrial practice. If, however, the physician has begun the treatment of the case, a call for his services would be sufficient to put him on notice as to the possible existence of an emergency; and should the patient be injured by reason of his refusal to respond, the fact that he had been notified of the patient's needs would tend to prove negligence on his part and to place on him the burden of justifying his refusal.

2. The fact that there is only one physician in a community does not place on that physician any legal obligation to respond to a call. The obligations of a physician so situated are merely those imposed by the dictates of humanity, which, after all, may be even stronger than the obligations of law. But a physician so situated, who is inclined to refuse to respond to a call, should weigh carefully the effect on public opinion if it subsequently appears that his refusal resulted in the death of, or serious injury to, the patient.

3. The fact that a would-be patient is already indebted to a physician does not modify what has been said above; the physician is under no legal obligation to respond except under conditions stated in Paragraph 1.

GLUCOSE AND OTHER AUTOMOBILE "ANTIFREEZING" SOLUTIONS

To the Editor:—From time to time I have seen accounts of the use of commercial glucose in automobile radiators in the proportion of about a pint and a half to the gallon of water to prevent freezing. It seems the glucose is put into the radiator in the fall, and afterward, as it is needed, water is added just as in summer, for the glucose does not go away with the evaporation. Please state whether this is safe.

T. J. TUDOR, M.D., Exeter, Va.

ANSWER.—In February, 1922, C. H. LaWall, dean of the Philadelphia School of Pharmacy (*Am. J. Pharmacy* **94**:97), reported that for four years he had employed successfully commercial glucose (the ordinary confectioner's white glucose is preferred, although glucose for table use has served). The amount necessary is between 15 and 20 per cent., or about 1½ pints of glucose to a gallon of water. During the winter, the water lost from the radiator by evaporation is occasionally replaced. The solution is reported to get "slushy" at about 10 F., but it does not actually freeze and harden at —6 F. Glucose solution does not corrode metal, and seems to have no action on rubber. (A commercial product in which glucose is the active ingredient is now on the market.)

In reply to an inquiry, Dr. LaWall writes:

"I have never ceased to use the glucose mixture as outlined in my original article. I have heard some complaints from persons in whose cars the circulatory system was not well adapted, in some of which overheating seemed to be the trouble. I have never heard of a case, when it was used properly, in which breakage or damage of any kind occurred."

Honey water (1 part of honey dissolved in 1 part of hot water and strained, if necessary) has been tested in several states with reported good results as a nonfreezing engine cooler; the congealing point of this solution is stated to be not as low as that of glucose solution (*Am. J. Pharmacy*, April, 1924, p. 303).

A discussion of other types of freezing mixtures, particularly alcohol and water, was published in THE JOURNAL, Nov. 26, 1921, p. 1756. Before any antifreeze mixture is placed in the radiator, the radiator and circulatory system should be thoroughly flushed out.

ANTIPNEUMOCOCCUS SERUM

To the Editor:—In THE JOURNAL, May 13, 1922, p. 1498, there appeared the following abstract of a paper published by G. Izar and G. Caruso (*Riforma Medica* **38**: 145 [Feb. 13] 1922): "Izar has demonstrated that by adding doubly distilled water to an immune serum, the antibodies separate out. He now reports a similar research on mixtures of antigens and antibodies. The precipitate obtained by centrifugation and addition of distilled water retains the power of fixation of complement." 1. Could you give me the points of difference between the procedure of Izar and that of Felton, recently mentioned in an editorial? 2. What are the points of difference between the procedures and what is the present status concerning the therapeutic value of this concentrated pneumococcus serum?

CHARLES KORB, M.D., Boston.

ANSWER.—1. Izar and Caruso concentrated antibodies by diluting the serum with twice distilled water. They found in 1921 that the optimal proportion between serum and water differs in different antibodies. Felton's basic method is identical with this procedure. He observed, however, in such precipitates an action that is antagonistic to its protective value. He obviates this disadvantage by repeated washing or by precipitation in a thousandth molecular solution of organic acids, such as tartaric.

2. The question of therapeutic value of such concentrated serums is still in the experimental stage. The outlook is hopeful, especially with regard to the advantages of other concentrated serums.

COMPOUND SOLUTION OF IODIN

To the Editor:—In the article by Dr. Crile and the discussion in THE JOURNAL, September 13, mention is made of compound solution of iodin. Will you kindly publish the formula?

F. S. WRIGHT, M.D., Salmon, Idaho.

ANSWER.—Compound solution of iodin, liquor iodi compositus ("Lugol's solution"), is official in the U. S. Pharmacopeia. The formula for preparation is:

Iodin	5 gm.
Potassium iodid	10 gm.
Distilled water, a sufficient quantity to make	100 gm.

PAPER CUPS VERSUS WASHED GLASSES

To the Editor:—There is a movement here to enforce the drinking places to use paper cups. The druggists propose the following care for glasses and claim that it is just as effective in preventing the spread of disease: 1. Wash glasses with automatic tumbler washer. 2. Rinse in a solution of monocarbonate of soda to which strong ammonia water has been added. 3. Rinse in clear water. I would like to get your opinion.

W. H. G., M.D.

ANSWER.—Contamination of glasses used in drug stores for dispensing drinks arises from two sources: the mouth of persons drinking from them and the hands of the clerk serving the drinks. The first source is entirely eliminated by the use of paper cups. The automatic tumbler washer, even when chemical solutions are used, seems to us less satisfactory because of the difficulty in properly cleansing the rim of the tumbler—the most important portion. From a hygienic standpoint, no method of washing is entirely satisfactory unless hot water is used.

The second source of contamination, the hands of the clerk, is not entirely eliminated in either case, but a method that

reduces the amount of handling of glasses or cups should be given preference. Paper cups are probably better in this respect.

SOURCES OF INSULIN

To the Editor:—Kindly inform me as to all the known sources, animal or vegetable, from which insulin has been prepared up to the present day.

JULIUS FERBER, M.D., New York.

ANSWER.—The active principle or principles in the product commercially known as insulin have not been identified. It is difficult to state, therefore, just what substances contain the active principle or principles. Reports have been made from time to time that a substance behaving as does insulin obtained from the pancreas of animals has also been isolated from vegetables and from tissues other than the pancreas. An editorial discussing this subject appeared in THE JOURNAL, May 10, 1924, p. 1521.

TESTS FOR INDICANURIA—MERCURY USED IN MANOMETER

To the Editor:—1. What is the best method to use in testing for indicanuria? 2. Please tell me how to clean mercury such as is used in blood pressure apparatus.

G. C. KILPATRICK, M.D., Mobile, Ala.

ANSWER.—1. The following are standard tests for indicanuria:

Obermayer's test: Equal parts of urine and of Obermayer's reagent (a solution of 2 gm. of ferric chlorid in 1 liter of hydrochloric acid) are mixed in a test tube and allowed to stand for two or three minutes; a small amount of chloroform is added, and the test tube is inverted several times. With normal amounts of indican, the chloroform layer becomes a faint blue; a dark blue denotes increase of indican.

Jaffé's test: Equal parts of urine and strong hydrochloric acid are mixed in a test tube; 2 c.c. of chloroform and from 1 to 3 drops of strong aqueous solution of chlorinated lime are added; the test tube is inverted several times. The interpretation of the color of the chloroform is the same as in Obermayer's test.

2. For partial cleaning of mercury, the mercury can be filtered through a clean chamois skin, the point of the cone of which has been previously punctured with a few pin holes. In case this is not sufficient, the mercury can be cleaned by being placed in a casserole with some diluted nitric acid and heated over a flame until the acid boils, the mixture being stirred for a few minutes. The nitric acid is then removed by decantation from the mercury; the mercury is washed with several portions of distilled water, and finally *dried* by the insertion of dry filter paper into the mercury. (The filter paper should be of a quality that does not give off "lint.") Of course, the manometer tube should also be cleansed by treatment with concentrated nitric acid. Also, it must be absolutely dry, with no traces of moisture remaining before the mercury is replaced.

"CRYING IN UTERO"

To the Editor:—In THE JOURNAL, October 11, p. 1187, you state that the possibility of the mature fetus crying in utero is indisputable. Will you kindly give me citations on the subject?

GEORGE CLINTON BLADES, M.D., Baltimore.

ANSWER.—The following is a list of references to this subject:

Nyström, B.: Vagitus Uterinus, *Finska Läk.-Sällsk. Handl.* **65**: 469 (July-August) 1923.
Krause, H.: A Case of Vagitus Uterinus, *Zentralbl. f. Gynäk.* **46**: 625 (April 22) 1922.
Johannsen, T.: Case of Vagitus Uterinus, *Zentralbl. f. Gynäk.* **46**: 1025 (June 24) 1922.
Gjersøe, K.: Case of Vagitus Uterinus, *Norsk. Mag. f. Lægevidensk.* **81**: 367 (March 31) 1920; abst. THE JOURNAL, May 29, 1920, p. 1552.
Sprod, M. W.: Prenatal Crying, *M. J. Australia* **2**: 27 (July 9) 1921.
Von Klein, C. U.: Vagitus Uterinus, *Monatschr. f. Geburtsh. u. Gynäk.* **60**: 154 (Oct.) 1922.
Fuchs, H.: Vagitus Uterinus, *Zentralbl. f. Gynäk.* **44**: 1310 (Nov. 13) 1920.

PRONUNCIATION OF VITAMIN

To the Editor:—Please give me the correct pronunciation of "vitamin."

RODGER CHENOWETH, M.D., Escanaba, Mich.

ANSWER.—The American Illustrated Medical Dictionary and also Stedman's Medical Dictionary give the pronunciation as vī'-tam-in. Nelson's Loose Leaf Encyclopedia and several English dictionaries not devoted exclusively to medicine give the pronunciation as vī-tam'-in.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ARKANSAS: Little Rock, Nov. 11-12. Sec., Regular Board, Dr. J. W. Walker, Fayetteville. Sec., Homeopathic Board, Dr. George M. Love, Rogers. Sec., Eclectic Board, Dr. C. E. Laws, Fort Smith.

CONNECTICUT: New Haven, Nov. 11. Sec., Homeopathic Board, Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

CONNECTICUT: Hartford, Nov. 11-12. Sec., Regular Board, Dr. Robert L. Rowley, 79 Elm St., Hartford.

MAINE: Portland, Nov. 11-12. Sec., Dr. Adam P. Leighton, Jr., 192 State St., Portland.

MASSACHUSETTS: Boston, Nov. 11-13. Sec., Dr. Charles E. Prior, 144 State House, Boston.

MISSOURI: Kansas City, Nov. 10-13. Sec., Dr. Cortez F. Enloe, Capitol Bldg., Jefferson City.

NEBRASKA: Lincoln, Nov. 18-20. Supt., Dr. J. D. Case, State House, Lincoln.

NEVADA: Carson City, Nov. 3. Sec., Dr. S. L. Lee, Carson City.

SOUTH CAROLINA: Columbia, Nov. 11. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

TEXAS: Dallas, Nov. 18-20. Sec., Dr. T. J. Crowe, 918-19 Mercantile Bank Bldg., Dallas.

WEST VIRGINIA: Charleston, Oct. 28. Sec., Dr. W. T. Henshaw, Charleston.

Maryland June Examination

Dr. Henry M. Fitzhugh, secretary, Maryland Board of Medical Examiners, reports the written examination held at Baltimore, June 17-20, 1924. The examination covered 9 subjects and included 90 questions. An average of 75 per cent. was required to pass. Of the 66 candidates examined, 64 passed and 2 failed. Eleven candidates were licensed by reciprocity, and one candidate was licensed by endorsement of credentials. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Georgetown University		(1923)	89
Johns Hopkins University	(1921) 89, (1922) 87, (1923, 4) 80, 81, 83, 86, (1924, 24) 77, 80, 80, 82, 82, 82, 83, 84, 84, 84, 85, 85, 85, 86, 86, 87, 87, 88, 90, 90, 91, 91, 93, *		
University of Maryland	(1923, 4) 80, 80, 82, 87, (1924, 18) 82, 83, 84, 84, 85, 85, 85, 85, 86, 86, 86, 86, 87, 88, 88, 89, 90, 90		
Jefferson Medical College	(1923, 2) 82, 87,	(1924)	82
University of Pennsylvania		(1924)	88
Medical College of Virginia		(1924)	90
Dalhousie University Faculty of Medicine		(1914)	*
McGill University Faculty of Medicine		(1921)	82
Licentiate of the Royal Coll. of Phys., London, England		(1917)	89
University of Konigsberg, Germany		(1901)†	*
University of Warsaw, Russia		(1920)†	*
University of Geneva, Switzerland		(1914)†	75
	FAILED		
Howard University		(1920)	69
Meharry Medical College		(1923)	58

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
George Washington University		(1907)	Dist. Colum.
Howard University		(1922)	Dist. Colum.
Atlanta Medical College		(1915)	Tennessee
Southern College of Medicine and Surgery		(1913)	Georgia
Chicago College of Medicine and Surgery		(1917)	Illinois
Chicago Medical College		(1890)	Illinois
Baltimore University School of Medicine		(1896)	Virginia
University of Michigan		(1923)	Michigan
Lincoln Memorial University		(1910)	Tennessee
Meharry Medical College		(1922)	Tennessee
University of Naples, Italy		(1896)	New Jersey

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement with
Johns Hopkins University		(1920)	N.B.M.Exam.

* No grade given.
† Graduation not verified.

Tennessee June Examination

Dr. A. B. DeLoach, secretary, Tennessee Board of Medical Examiners, reports the written examination held at Nashville, Knoxville and Memphis, June 13-14, 1924. The examination covered 8 subjects and included 64 questions. An average of 75 per cent. was required to pass. One hundred and sixteen candidates, including 1 undergraduate, were examined, all of whom passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
College of Medical Evangelists		(1923)	88.3
Northwestern University	(1924) 85.3,	(1924)*	84
Johns Hopkins University		(1923)	77.5
Columbia University		(1923)	84.4
Leonard Medical College		(1911)	82

University of Cincinnati.....(1923, 2) 80.4, 85
Memphis Hospital Medical College.....(1912) 81.5
Meharry Medical College.....(1924, 20) 75.4, 78.9, 79, 79, 80.4, 80.8, 81, 81.1, 81.1, 81.1, 81.5, 82, 83, 83, 83.1, 83.4, 84.3, 84.6, 85.4, 86.8
University of Tennessee.....(1924, 39) 81, 81.8, 82, 82.1, 82.3, 82.9, 83.1, 83.3, 83.9, 84.5, 84.6, 84.9, 84.9, 85, 85.1, 85.1, 85.3, 85.3, 85.4, 85.4, 85.5, 85.8, 85.9, 86, 86.3, 86.9, 87, 87.1, 87.3, 87.9, 88.1, 88.8, 88.9, 89, 89.3, 90.3, 90.5, 90.6, 91
Vanderbilt University.....(1924, 47) 79.8, 81.4, 82, 82.3, 82.4, 83.3, 83.8, 84.3, 84.3, 84.5, 84.5, 84.8, 84.8, 84.9, 85, 85.1, 85.1, 85.6, 85.6, 85.8, 85.8, 85.9, 85.9, 86.4, 86.6, 86.8, 86.9, 87, 87.3, 87.4, 87.4, 87.5, 88.3, 88.3, 88.4, 88.6, 88.9, 88.9, 89.3, 89.4, 89.6, 89.6, 89.9, 90, 90.4, 90.5, 91.8
Undergraduate 75.8

* This candidate has completed his medical course, and will receive his M.D. degree on completion of a year's internship in a hospital.

Wyoming June Examination

Dr. J. D. Shingle, secretary, Wyoming Board of Medical Examiners, reports the written examination held at Casper, June 9-11, 1924. The examination covered 14 subjects and included 100 questions. An average of 75 per cent. was required to pass. One candidate was examined and passed. Six candidates, including 1 osteopath, were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
University of Nebraska		(1924)	81.4

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Northwestern University		(1920)	W. Virginia
University of Illinois		(1911)	Illinois
John A. Creighton Medical College		(1910), (1920)	Nebraska
University of Nebraska		(1923)	Nebraska
Osteopath			Missouri

Book Notices

PUBLIC HEALTH NURSING. By Mary Sewall Gardner, R.N., A.M., Director, Providence District Nursing Associaton. Second edition. Cloth. Price, $3. Pp. 432. New York: The Macmillan Company, 1924.

This has been thoroughly revised. The subject matter is divided into six parts with many subgroups. Part 1 covers the rather phenomenal expansion of the public health nursing movement, and offers as an explanation that it is not a purely philanthropic impulse, but that it rests on the solid foundation of a well recognized and permanent necessity. A short chapter is devoted to fundamental principles of nursing. Modern problems of nursing are discussed under such headings as education, private or public control and publicity. The author says that the function of the private organization of the future will probably be initiation of new work, and supplementing the regular work of publicly controlled bodies. In summing up the arguments for specialization, the author concludes that there is danger that the broad grasp of the subject of public health will be missed. Likewise, specialization may be carried to such an extent that there may be unnecessary invasion of homes by a number of nurses. In the chapter on professional relationships, it is stated that in the old days a nurse had few professional relationships, except those with physicians. Nowadays, there is a definite question to be asked, such as, Where does the work of a medical social worker begin and that of a public health nurse end? Public health nursing under private auspices, and under public auspices, such as state, county and municipality, are discussed in special sections. The functions of state nursing seem to fall into one of two classes: either the state standardizes, advises and assists without direction or regulation, or the state assumes the threefold responsibility of education or publicity, organization and standardization or supervision. In discussing county nursing, credit is given the Red Cross for its part in the establishment of rural nursing. Municipal work reaches its highest efficiency when a separate nursing bureau exists and the nurses working in various departments are responsible to the bureau. When civil service rules exist, a minimum requirement of qualifications should be insisted on. It is of interest to note that for a city of 100,000 population, a nursing service of fifty is suggested. Of this number, twenty nurses are to be used for bedside care, fifteen for infant welfare work, eight for school health work, four for tuberculosis, two for venereal disease, and one for communicable diseases. In Part 4, the nursing group, the supervisor, the chief executive, the pupil, the new nurse and the nurse working alone, are advised as to their duties and common responsibilities. The chapter on group management is particularly good. The chapter in reference to the new nurse and the pupil outlines the undergraduate course of public health nursing for the pupil in the training school and its subsequent connection with public health work. It is admitted that a postgraduate course should be a part of the educational equipment of every public health nurse. Part 5 discusses rather fully the special branches of public health nursing, such as tuberculosis, child welfare, school mental hygiene, industrial hygiene and venereal disease. The chapter on mental hygiene indicates the many phases in which the nurse can help, and emphasizes the importance of such type of work with the school child. Part 6 is concerned with the necessity and importance of keeping uniform records. In the appendix, a chronology of public health nursing events is given in considerable detail, affording a ready reference.

TOXICOLOGY OR THE EFFECTS OF POISONS. By Frank P. Underhill, Ph.D., Professor of Pharmacology and Toxicology, School of Medicine, Yale University. Cloth. Price, $2.25. Pp. 292. Philadelphia: P. Blakiston's Son & Co., 1924.

This book includes a course of lectures representing a compilation from standard textbooks and the literature. No attempt has been made to give the details involved in the isolation and identification of poisonous substances. It is intended, rather, to give the essential effects of poisons. Each poison is treated from the standpoint of general description, poisonous action, symptoms, fatal dose, fatal period, postmortem appearance, and treatment of the patient when poisoned. The differences between acute and chronic poisoning are considered, particularly in the discussions of arsenic, lead and mercury. The liability of poisoning from bismuth compounds employed in the treatment of syphilis and from impurities in barium sulphate when this substance is used in roentgen-ray work are mentioned. The critical nature of the book is evidenced from the statement in the chapter on mercury poisoning: "A variety of treatments have been proposed aimed to render less active mercury that has been absorbed. None of these has proved of distinct advantage." Some misstatements occur, as, for example, that crystals of codein "possess the same solubilities as morphin, being relatively insoluble in water." This is scarcely correct, codein being soluble in 120 parts of water, and morphin in 3,340 parts. These differences in solubility are so great that they are applied in practice in separating the two alkaloids. While the forensic toxicologist will find little in the book to commend it because of its brevity and narrow scope, it should prove useful to the practitioner, the medical student and the coroner.

THE CIRCULATORY DISTURBANCES OF THE EXTREMITIES. Including Gangrene, Vasomotor and Trophic Disorders. By Leo Buerger. Cloth. Price, $8.50 net. Pp. 628, with 192 illustrations. Philadelphia: W. B. Saunders Company, 1924.

This volume centers about thrombo-angiitis obliterans, the disease that Buerger has made his own. Nearly a third of the text is devoted to the consideration of this disease. Other diseases are mentioned or described largely from the standpoint of their resemblance to or difference from this one. It is not to be understood that they are imperfectly described. On the contrary, gangrene, arteriosclerosis, Raynaud's disease and other topics are fully discussed. There are also several chapters devoted to the anatomy and physiology of the vessels; and, pertinently, thrombosis is fully considered. The clinical features and pathologic anatomy of thrombo-angiitis obliterans are described with minutest detail, in fact, with such detail as to be bewildering; too much detail, it seems to us. It is a significant commentary on our knowledge of this disease that a close student like Buerger, whose accurate knowledge of the clinical facts and the underlying pathologic anatomy is based on an experience with more than 500 cases, is forced to admit that its real

etiology is unknown. Only two pages are devoted to etiology, and treatment is dismissed in six pages.

The volume is a useful one for reference, as it is filled with much valuable information. It seems, however, rather hard reading, partly because of a style that it heavy with odd and cumbersome words, distracting attention from what is said to how the thing is said, and partly, as has been stated, because the author inserts in the text details that might better be omitted or relegated to fine type. Also he is argumentative and prolix when he might better be dogmatic, as when he aims to establish the fact that intermittent claudication is not a disease *sui generis* but rather a grouping of symptoms common to several disease conditions, though oftenest found in thrombo-angiitis obliterans. There is too much unnecessary labor taken to prove a point that will probably be readily admitted by all his readers. A lighter style, more clarity, considerable condensation and better proofreading would enhance the utility of a really valuable contribution to medical literature.

LEXIKON DER GESAMTEN THERAPIE DES PRAKTISCHEN ARZTES MIT EINSCHLUSS DER THERAPEUTISCHEN TECHNIK. Unter Mitarbeit zahlreicher Fachgenossen. Herausgegeben von Walter Marle (W. Guttmann). Lieferung: 11, 12, 13 and 14. Second edition. Paper. Pp. 1565 to 2198. Berlin: Urban & Schwarzenberg, 1924.

The eleventh, twelfth, thirteenth and fourteenth instalments of this reference handbook of therapeutics are now in hand, and with these this rather monumental work (in three volumes) is completed. The all embracing nature of this "lexicon" may perhaps be illustrated by the articles on the treatment of stuttering and other speach disturbance, and those on tooth extraction and the treatment of dental ailments, subjects usually not included in books of this kind. An appendix containing a list of medicinal agents, and one giving an exhaustive list of health resorts, chiefly those of Germany, Austria and Switzerland, are also to be found. For the general practitioner who reads German, these books would be a good investment, as they would bring to his desk the experience and advice of leading specialists in various lines of therapy. One cannot help wishing that a similar work in the English language might be undertaken and as successfully concluded.

PRACTICE OF MEDICINE. Desk Index. Edited by Frederick Tice, M.D., Professor of Medicine and Clinical Medicine, and Head of the Department of Medicine, University of Illinois College of Medicine. Foreword by M. W. Ireland, M.D., Surgeon-General, U. S. Army. Cloth. Pp. 342. Hagerstown, Md.: W. F. Prior Company, Inc., 1924.

This is a quite complete index to Tice's System of Medicine. Little difficulty will be found as a rule in locating the subject that is under search, though we have failed in one or two instances to find reference to the topic for which we hunted. The heavy-typed guiding words are sometimes rather oddly chosen, there being an especial fondness for the names of drugs and therapeutic measures. It strikes one as strange, for example, in looking for "gallstones," to find an important heading like this in small type but "Galyl" in heavy type. To make a comprehensive index that will be constructed on a system that will satisfy everybody is a difficult task. This one is reasonably satisfactory. After all, as Surgeon General Ireland says in his foreword, the most useful information is a knowledge as to where facts may be readily obtained. This index will, we believe, be found a workable and satisfactory help in furnishing this information.

LA PIELOGRAFIA. Por el F. Legueu, Profesor de Clinica Urológica en la Facultad y Cirujano del Hospital Necker de Paris. Paper. Price, 6 pesetas. Pp. 72, with 17 illustrations. Madrid: Paracelso, 1923.

A book on pyelography by the successor of Guyon and Albarrán cannot help being of interest. After a brief but complete historical survey, Legueu discusses with his usual thoroughness and brevity the technic, accidents, results and uses in various conditions. He still favors for injection sodium bromid with a small percentage of mercuric oxicyanid for antiseptic purposes. Possibilities as well as limitations and dangers are explained with respect to a method that is properly called "one of the most recent and important urologic developments." A number of pyelograms illustrating different conditions appear at the end of the book. There is a fair, but representative bibliography, mostly from French sources, although there are a few references to both North and South American papers.

CLINICAL ASPECTS OF THE ELECTROCARDIOGRAM. A Manual for Physicians and Students. By Harold E. B. Pardee, M.D., Associate in Medicine, Cornell University Medical School. Cloth. Price, $4. Pp. 222, with 56 illustrations. New York; Paul B. Hoeber, Inc., 1924.

This is well written and concise, yet comprehensive. The clinical aspects of cardiac irregularity and myocardial disease are thoroughly discussed. There is a good description of the electrocardiograph and the theory of the electrocardiogram. The illustrations are excellent, as are paper and type. The physician who desires to learn the practical working and the applied value of this instrument will find the volume a helpful guide and a valuable book for reference.

RADIOLOGIA DEL APARATO DIGESTIVO. Por el Dr. Juan Manuel Madinaveitia. Prologodel Dr. L. Urrutia. Paper. Price, 8 pesetas. Pp. 170, with 80 illustrations. Madrid: Paracelso, 1924.

While the title of this book is radiology of the gastrointestinal tract, fluoroscopy is really meant. It is a record of the author's experience in about 6,000 cases. While its candor, simplicity and unpretentious form are stimulating, it cannot replace more ambitious efforts. Eighty drawings from tracings enhance the value of the work. Many, however, will take exception to the statements that, as regards diagnosis, fluoroscopy is the whole of radiology.

Medicolegal

Cults Not Discriminated Against—Proof of License

(Jackson v. State (Ala.), 99 So. R. 826)

The Court of Appeals of Alabama, in affirming the judgment from which an appeal was taken by defendant Jackson, who was convicted of treating diseases of human beings without a license, says that the evidence was without conflict that he had engaged in the practice of a chiropractor without having obtained a certificate of qualification from the state board of medical examiners. Under the law of Alabama any person who treats, or offers to treat, diseases of human beings, by any system of treatment whatever, must obtain a certificate of qualification so to do from the state board of medical examiners, and the treating or offering to treat diseases of human beings without having obtained a certificate of qualification from the board is a misdemeanor (Acts 1915, p. 661), and this applies to the chiropractor as well as to any one who treats, or offers to treat, diseases of human beings by any system of treatment. In other words, under the present law the privilege of engaging in the calling or profession of treating, or offering to treat, diseases of human beings by any system whatever is denied to all persons who have not obtained the required certificate of qualification from the board.

This statute is not unconstitutional, as was insisted by the appellant. It is a valid exercise of the police powers, and has as its purpose the protection of the public; and is not discriminatory, as the authority of the state board of medical examiners to issue certificates of qualification is not limited to those who desire to enter the profession as homeopathic physicians, but extends to all schools or systems of treatment. Therefore the chiropractor is not excluded or discriminated against, under the provisions of this statute, for he has the same right to apply to the board for the required certificate of qualification as has the osteopath or homeopath, and, if the necessary certificate of qualification is awarded him, there is nothing in the law that denies him the right to pursue his method, known as the chiropractic system of treatment. As has well been said, this law is designed to protect the public from the ignorant and the incompetent; and as stated, since there is no discrimination in this law against the school of practic indulged by the appellant, there is no reason why he, or his class, should be excepted from the operation thereof.

Not only did the complaint in this case follow the form laid down in the code in the first count, which was sufficient, but in the third count the language of the statute was substantially followed, which made that count good. Demurrers to the complaint were properly overruled.

On the trial of this case, the state unnecessarily assumed the burden of proving that the defendant had not obtained a certificate of qualification from the state board of medical examiners. This was defensive matter, and, as the state had offered testimony showing that the defendant treated disease of human beings, the burden was cast on the defendant to show that he had obtained the certificate of qualification required by law.

Prerequisites to Award for Physician's Bill, Under Workmen's Compensation Law

(Staff v. Eagle Warehouse & Storage Co. et al. (N. Y.), 204 N. Y. Supp. 430)

The Supreme Court of New York, Appellate Division, Third Department, says that the claimant in this proceeding under the workmen's compensation law hit his finger with a hammer. His injury resulted in no disability for which compensation could be had; but a physician rendered him some services for which he made a charge of $72. The injured man did not pay for the medical services, and filed no claim. The company that was his employer when he was injured conceded that it had authorized him to receive medical services from the physician, but it objected to paying the bill, in reality on the ground that the physician had refused to make any reasonable proof of the amount of his bill. In fact, it was only after considerable delay that the physician appeared before the industrial board at all, and then said that the bill was for services rendered from October 21 to November 21, a total of $72. An award was made to the injured employee in the sum of $72, with a lien thereon to the physician in the sum of $72. But that award is here reversed, and the claim dismissed. Had the employee filed a claim and paid for the medical services rendered him, the award could be sustained. But in this case, in which no claim was filed, and an objection on that ground was taken on the hearing, the state industrial board had not jurisdiction to make the award.

Contract of Third Party to Pay for Cesarean Operation Valid

(Dyer v. Griffith (Mo.), 261 S. W. R. 100)

The Supreme Court of Missouri, Division No. 1, says that the plaintiff sued the defendant, who was the mother of a Mrs. Self, for $572, of which $500 was for performing a cesarean operation on Mrs. Self, and the remanider for services subsequent and incidental to the operation. For some months prior to the making of the alleged contract with the defendant to pay for the operation, the plaintiff had been in attendance on Mrs. Self at different times as to her condition of pregnancy and also other illness. The defendant introduced evidence of some conversation between the plaintiff and Mr. Self to the effect that if the child should be a girl, Self was to pay him nothing, but if a boy, double price. The plaintiff testified that this was spoken by way of jesting, and before the condition of Mrs. Self made it apparent that the cesarean operation would be necessary. The defendant also introduced in evidence a statement which showed "Mrs. R. W. Griffith, Mr. Floyd Self," indebted to the plaintiff, "To professional services to date $572." The plaintiff's testimony was that he did not direct, or at the time know of, the making of the statement. The assistant in his office testified that she made out the statement at the request of the defendant, who requesed that it be made to Floyd Self. She denied that she had been instructed by the plaintiff as to the manner of placing the charge on the book or statement. She said on cross-examination that the statement was made as it was on the book. There was sharp conflict in the testimony, on nearly all of the matters mentioned.

The plaintiff testified that generally it was understood, and that he understood, that when he was called to make diagnosis, and a state of pregnancy was disclosed, he was wanted to take care of the case, unless told to the contrary; that therefore he felt he could not quit until she was delivered, unless told otherwise, and that this state of fact existed at the time the defendant promised to pay the bill, and that up to that time he had not released anybody; that whoever had been responsible to him was "still responsible, up to that time." He also testified very positively on cross-examination that under the ethics of his profession he would not have quit, nor refused to perform the operation because of danger of not getting his money. He made these statements in part in explanation of what he told the defendant when he said that he would not neglect the patient, after the defendant had said to him that she was afraid that he had not answered a call because he knew that her son-in-law had not supported his wife. After that, as the plaintiff testified, the defendant said; "I want this understood right now: That this is my bill." Under the state of the plaintiff's evidence, the court cannot say that the jury was bound to attribute the plaintiff's attitude as expressed above to recognition of the obligation of a contract, and might not reasonably construe these statements to mean that the plaintiff, having been called and been in attendance on Mrs. Self during her pregnancy, would have performed the service whether his remuneration was assured or not, rather than to have violated the ethics of his profession. On the issue under the demurrer offered to the evidence, and here under consideration, the plaintiff was entitled to have the evidence reviewed in the light favorable to himself, and to have such inferences as might reasonably be drawn therefrom in his favor.

According to the plaintiff's evidence, the responsibility of deciding whether the operation should be performed by him, and immediately, and not by another and later, was placed on the defendant, and she in that connection asserted that she would pay for it, assuming this responsibility. In assuming this double responsibility for something yet to be done, and not included, as the plaintiff's evidence tended to show, in any existing contract between the plaintiff and the Selfs, the defendant made the debt her own and not the debt of another. It became, if the plaintiff's evidence was credited by the jury, an independent and original understanding between the plaintiff and the defendant as to the operation then to be performed. As such it was not required to be in writing. There was evidence enough to submit to the jury tending to show that the defendant's promise was not in the way of being a surety or guarantor for an obligation of the Selfs, then existing, or then to be incurred.

The plaintiff was given judgment for $500 and accrued interest, which is affirmed.

Presumption of Competence of Physician Furnished by Employer

(Hardin v. Southern Ry. Co. (S. C.), 122 S. E. R. 582)

The Supreme Court of South Carolina, in affirming an order sustaining a demurrer to the complaint, says that the demurrer was properly sustained for reasons stated by the trial judge in the order. There it was said, among other things, that while it was true that it was alleged in a paragraph of the complaint, that the defendant employed "a young, green, and inefficient physician to treat the injuries of the plaintiff" (who was injured while in the defendant's service), and that the defendant was negligent in employing and retaining such physician, and that the injury of the plaintiff was unskilfully treated and never became well, these allegations were far from stating negligence in the employment of the physician. There was an entire failure to state in the complaint any facts showing that the defendant was under contract with the plaintiff to furnish medical aid to him. The complaint also failed to state any facts that tended to show that the defendant knew, or had any reason to suspect, that the physician so employed was incompetent or unskilful. Nor did it state any facts sufficient to constitute a cause of action for malpractice in a case of this kind. It was necessary to allege knowledge on the part of the employer, or some facts from which constructive knowledge of the physician's incompetence could be inferred. In the absence of allegation and proof, the law will presume that the physician employed is reasonably skilful and competent, and the burden of establishing the contrary rests on the plaintiff.

Society Proceedings

COMING MEETINGS

American College of Radiology and Physiotherapy, Chicago, Nov. 12-14. Dr. Roy W. Fouts, 121 South 33d Street, Omaha, Secretary.

Association of Military Surgeons of the United States, San Antonio, Tex., Nov. 13-15. Major E. E. Hume, M. C., U. S. Army, Army Medical Library, Washington, D. C.

Central States Pediatric Society, Rochester-Minneapolis, Oct. 30-31. Dr. H. T. Price, Westinghouse Building, Pittsburgh, Secretary.

District of Columbia, Medical Society of, Washington, Dec. 3. Dr. C. B. Conklin, Medical Science Building, Washington, Secretary.

Interstate Post-Graduate Assembly of America, Milwaukee, Oct. 27-31. Dr. W. B. Peck, 82 Stephenson St., Freeport, Ill., Managing Director.

New York and New England Association of Railway Surgeons, New York, Oct. 25. Dr. Horace H. Le Seur, Batavia, N. Y., Secretary.

Philippine Islands Medical Association, Manila, Dec. 18-20. Dr. I. Concepcion, College of Medicine and Surgery, Manila, Secretary.

Porto Rico, Medical Association of, San Juan, Dec. 13-14. Dr. Ramon M. Suarez, Santurce, Secretary.

Radiological Society of North America, Kansas City, Mo., Dec. 8-12. Dr. M. J. Sandborn, 844 College Ave., Appleton, Wis., Secretary.

Southern Medical Association, New Orleans, La., Nov. 24-27. Mr. C. P. Loranz, Empire Building, Birmingham, Ala., Secretary.

Southern Surgical Association, Charleston, S. C., Dec. 9-11. Dr. H. A. Royster, 423 Fayetteville Street, Raleigh, N. C., Secretary.

Western Surgical Association, French Lick Springs, Dec. 4-6. Dr. Harry P. Ritchie, Lowry Building, St. Paul, Secretary.

INTERNATIONAL CONFERENCE ON HEALTH PROBLEMS

Held in Kingston, Jamaica, July 23-31, 1924

(Concluded from page 1273)

Tropical Sprue in Porto Rico

DR. BAILEY K. ASHFORD, San Juan, P. R.: To defer the diagnosis of sprue until the patient is entering on the stage of cachexia makes the outcome dubious, if not in many instances quite hopeless, due to permanent changes in digestive glands and the results of continued denutrition. This symptom complex is extremely frequent in Porto Rico and is popularly attributed to climate. The leading features in 227 persons suffering alone from this condition were (1) disordered digestion with acid dyspepsia and excess of intestinal gas; (2) constipation with or without occasional loose movements of the bowels; (3) a steady diminution in the size of the liver; (4) a sallow complexion; (5) a lowered blood pressure; (6) asthenia, and (7) a moderate loss of weight. In 26 per cent. of these cases the tongue was sensitive to mild irritants, such as pickles or smoking tobacco, but there were rarely any lesions, and these, when they occurred, were limited to small aphthae of the buccal cavity, or fleeting erythema of the tip and edges. Together with all of the foregoing there is an indefinable "nervousness" or nervous irritability, with psychic depression and a tendency to forget the little nearby details of life. There are vague pains in the body and palpitation of the heart, slight numbness and coldness of the hands and feet, and in 24 per cent. of the cases, muscular cramps in the legs, at times in the hands, and, rarely, even in the muscles of the throat. The genetic function of males is frequently diminished, the menstrual function of females diversely disturbed. A common phenomenon is a faint brownish-gray pigmentation over the malar prominences, forehead, cheeks just anterior to the ears, and, at times, symmetrically over the whole body. This may become so pronounced as to disfigure the features. In none of these cases was *Monilia psilosis* found, and all serologic tests were negative. That cases of this kind are largely due to an ill balanced diet in Porto Rico is seen in that a correction of these dietary defects effaces the picture. But they do not warrant a clinical diagnosis of sprue; however they may suggest its possible oncoming. It is said that abdominal pain in sprue is as rare as is nausea and vomiting. In 944 cases, 40 per cent. patients complained of occasional pain which was at times severe, 43 per cent. of nausea and 25 per cent. of occasional vomiting. Of 1,435 cases of sprue, about two thirds clinically complete in moderate or severe grade, 1,202, or 83.7 per cent. were positive, mycologically or serologically, or both, for *Monilia psilosis*. Of 698 cases clinically free from any suspicion of sprue, there were but 1.2 per cent. of carriers.

DISCUSSION

DR. FOSTER M. JOHNS, New Orleans: The question has been raised of the differential diagnosis between sprue and pernicious anemia. We are called on almost daily to differentiate such cases, and apparently do so on the cardinal outstanding factor of achlorhydria in pernicious anemia as contrasted to the evident carbohydrate dyscrasiae in sprue. Sprue gives quite a definite picture in examination of the stools with active fermentation of carbohydrates, and the presence of yeasts in the early stages and a marked fat residual later. In pernicious anemia, the first symptom is the undigested meats found in the residue. The administration of hydrochloric acid will usually clear up the diagnosis, the diarrhea of pernicious anemia clearing up rapidly.

DR. ARISTIDES AGRAMONTE, Havana: When all the evidence is sifted we shall come to the conclusion that at the bottom of this process there is really an endocrine insufficiency, and that on this condition of things (which we know depresses vitality through lowered resistance) become ingrafted a series of infections that give that syndrome of the disease. As regards the diagnosis of sprue, I do not think that it is more difficult than that of many other diseases. When glossitis, diarrhea, anemia, and loss of weight and strengh coexist, it is not very difficult to make a diagonsis of sprue. In pernicious anemia we do not have diarrhea as one of the symptoms, and very often no great loss of weight. As to the treatment, I am convinced that, expressed in a general way, an antidiabetic treatment is the thing. To this are added certain drugs to alleviate symptoms. There are certain cases of severe cachexia in which we can do little or nothing, and the patient goes on to death. We should always insist on a balanced diet, adding a few drugs, such as pancreatin and iron. One point of paramount importance is rest.

SIR LEONARD ROGERS, London: I have taken the view that the etiology of sprue is not yet fully understood, but that it begins in some failure of the digestive process, which may be due to faulty diet. In India I found that about one third of the cases begin with hill diarrhea at elevations of 7,000 or more feet, which was clearly a physiologic deficiency, as removal to a lower elevation at once stopped the symptoms. Any such digestive failure may become complicated by secondary infections. In India I found a secondary oral streptococcal infection always in cases with sore tongue and also in other cases as the most important factor. This led me to use vaccines made of oral streptococci with good results, which have been confirmed by Dr. Nichols of Ceylon, who found the organisms to be *Streptococci viridans*. I treated fifty cases in Calcutta by this method, in many of whom relapses had occurred after apparent cures in England, and the best evidence of its value is that of twenty cases treated in the tropics and then followed up for at least a year after the completion of the treatment, no less than eighteen remained well and at work in the tropics. As soon as the attacks of sore tongue cease to recur, the bowel conditions improve, and in this stage patients put on weight very rapidly if vitamins, especially B, contained in tomatoes and marmite soup, made largely from yeast, are added to the diet although I got no marked effect until after the use of streptococcic vaccines for two or three months. I attribute the beneficial effects of strawberries and other fruits to their vitamin content. I also give 20 grain (1.3 gm.) doses of bismuth salicylate, three times a day, about two hours after food, and if necessary also powder of ipecac and opium in the morning to control the diarrhea, and fermentation until the effects of the vaccine can be obtained.

DR. J. W. W. STEPHENS, Liverpool: A good deal of emphasis has been placed on "dietetic unbalance." I have no definite idea of what exactly is meant by this expression, but if there is any place where dietetic unbalance exists it must be on the west coast of Africa, where I have lived on canned foods for months at a time, and yet among the cases of sprue I have seen during the last ten years I can recall only one case (not completely typical) from West Africa. I experienced difficulty in the diagnosis of sprue. A patient with sore tongue with white frothy stools which microscopically show gas, and oil globules from which radiate

sheaves of crystals, presents a case of sprue. But a patient with no signs and only a vague history of sore tongue, with only two or three motions daily, semisolid, which are hardly pale and, in fact, are bile stained, and which may microscopically show only some doubtful excess of fatty crystals, presents quite a different problem. Such cases require mature judgment in arriving at a diagnosis. Stress is laid in the textbooks on indicanuria as a sign of sprue. About 20 per cent. of normal healthy persons have indican in the urine, and a healthy person may give as intense a reaction as a sprue case. "Acid saliva" is another "aid to diagnosis," but "acid saliva" is an exceedingly common normal phenomenon. Excess of fatty crystals in the stools is yet another aid but here, again, patients with dysentery diarrhea, also normal persons, show the same sign and so with achlorhydria. As regards symptoms, how often does Dr. Ashford observe tetany? As regards treatment, I am in general agreement with what has been said. All the cases that I have treated in Liverpool have done remarkably well on "a regular" diet, a diet which starts with small quantities of meat at regular intervals, from four to five times daily. The first result of this is that patients lose weight; in the second week, the weight goes up and they make steady progress and recover. Castor oil, one-half dram (2 gm.), is useful in treating the distention, and the patient is extremely grateful for the ensuing comfort.

DR. ALDO CASTELLANI, London: I am in complete agreement with Dr. Ashford on several points. As regards the geographic distribution, there is no doubt that sprue, although much more frequently encountered in the tropics, is a cosmopolitan disease. Dr. James Cantlie, I and others have come across cases of true sprue in Europe and in England. Cases have been described also in various parts of northern China. It is much more common in the south of China, especially in Hong Kong, it is common also in Singapore and in Ceylon, in the latter country being known as Ceylon sore mouth. The disease principally attacks people of the educated classes, while it is comparatively rare in the lower classes. I must say, however, that in Ceylon I came across cases of sprue among all classes, even among the coolies. In the East it is not so common in children as apparently it is in Porto Rico. As regards this point, it is necessary to differentiate from sprue, a disease which clinically is very similar to it and which is fairly often found in children, also in temperate zones. This is celiac disease, characterized by the patient passing abundant stools of whitish gray. There is also great wasting but no mouth symptoms. We do not yet know the etiology of sprue. At present, all we can say is that *Monilia* probably is a secondary invader, which may perhaps be the cause of some of the symptoms of sprue, as, for instance, the frothiness of the stools. In my experience there is a true blastomycosis of the intestine.

DR. W. E. DEEKS, New York: In our experience in other tropical countries, typical sprue is rare. It is quite possible that cases of sprue with frothy evacuations have the same predisposing factors as we find in pellagra plus a superadded *Monilia* infection which is responsible for the enormous frothy stools characteristic of sprue. I have been frequently called to see cases of so-called sprue, but have found them almost invariably to be cases which yielded rapidly when a properly balanced diet was administered, supplemented usually by the administration of 15 drops of dilute nitric acid with essence of pepsin in a tumblerful of water before meals. It is quite possible that the good results reported in the treatment of sprue with diets confined to milk, meat and strawberries and other agents is the result of cutting out excessive carbohydrate diet, which I believe to be the underlying factor. I have treated only one case of typical sprue, contracted in Porto Rico. This case yielded rapidly to the method of treatment I have just described. It is particularly important for tropical residents to incorporate in their diets generous quantities of green vegetables and fresh fruits, and limit the amount of carbohydrates. This is particularly applicable to those who take little exercise or follow sedentary occupations.

DR. SEALE HARRIS, Birmingham, Ala.: I have had very little experience with sprue. In most of the cases in which I suspected sprue, I was not positive of the diagnosis. It seems to me, however, that it is a disease in some respects similar to pellagra, and that nutrition plays a very prominent part in its production. By lowering resistance, it enables infection to occur.

DR. BAILEY K. ASHFORD, Mayaquez, P. R.: With regard to the rôle that *Monilia psilosis* could play in this disease sprue: It abounds from the first, even before the disease sprue makes itself manifest clinically, and if allowed to go on colonizing in the bowel, the disease will be produced. It is in the later phases of the disease, when cachexia is added to the picture, that *Monilia psilosis* seems to become scarcer. With regard to the therapeutic use of yeast, if it were possible to give this yeast pure, it might be helpful. I gave a commercial yeast manufactured in the United States, and the contamination was so bad I could not continue its use. It upset some of my patients badly. Relapses after the use of *Monilia* vaccines seem not to be prevented. My impression is that there are many relapses after the use of vaccines. Indican is not high in sprue; in 71 per cent. of 144 cases, it was normal. I believe that at some time in the course of sprue, we have tetany in 25 per cent. of the cases. Dr. Agramonte mentioned endocrine insufficiency. I have been diffident in mentioning this on account of the present chaotic state of endocrinology, but I agree with him. There is one certain thing, that there seems to be a decided and consistent suprarenal insufficiency in sprue. I agree with him in regard to the necessity for rest in treatment.

Results of the Noguchi Treatment in Yellow Fever Epidemic in Belize

DR. JAMES CRAN, Belize, British Honduras: The outbreak proved the value of the serum as a curative agent, but left that of the vaccine in doubt. Of the seventeen patients, all received the serum. Four of those were already in their fourth to their sixth day. All died. Of the other thirteen patients, all received the serum on the first or second day. Only one died. No cases occurred in the town among those who had been vaccinated. It is my firm opinion based on experience that several more would have ended fatally but for the serum treatment, and more cases would have occurred in the town had not the antiyellow fever vaccine of Noguchi been available. Belize is not unhealthy. It has had only two small outbreaks of yellow fever in the last thirty years. Both, curiously enough, at fifteen years' interval, and both stamped out in less than six weeks. Zymotic diseases, except those of childhood, are practically unknown. The anti-mosquito campaign is already showing results in reduced hospital figures for malaria. Europeans live in Belize for thirty to fifty years in the best of health and, like, myself, are apparently taking only one serious risk—that of dying of old age.

DISCUSSION

SIR JAMES K. FOWLER, London: It fell to my lot as a member of the advisory committee of the colonial office, to investigate the outbreak at Belize in 1921, but the conclusions at which I arrived were somewhat different from those which have been placed before you. They were that yellow fever was endemic in Belize at the time the students returned to the college where the first cases occurred; that the students did not bring the disease to the college, and that the first three cases were in Indian servants who alone went into the town and they were the first to be infected. That is exactly what has happened in epidemics in West Africa when the "Syrians" represent the Indian servants. They are there the persons most nearly European in blood who mix with the population, and in consequence the epidemics most often start with the "Syrians."

DR. JUAN ITURBE: In 1918, in collaboration with Dr. Gonzalez, I was able to isolate a culture of spirochete from the rats in Caracas exactly like *Spirochaeta icterohaemorrhagiae* of the Japanese investigators. I was unable to determine whether this spirochete belonged to the Japanese or the European strain. I could obtain infection by contact with these organisms. We also found a pseudo *Spirochaeta icterohaemorrhagiae* in the aqueduct water of Caracas. I employed Manteufel's method. With Noguchi's method also

I obtained pure cultures. The inoculations in guinea-pigs gave negative indications at first, but after eight or nine days of incubation I obtained in animals a fever and subsequent clinical symptoms and anatomic findings of spirochetosis icterohemorrhagiae.

DR. W. E. DEEKS, New York: Do we get good results from a specific serum? Is it not due to foreign protein? In some of my work in the tropics we have tried specific serum. We got satisfactory results. I found that in another division boiled milk which was used by one of my men was just as effective in a similar case. Whether in the treatment of these diseases specific serum or protein plays a larger part, I do not know.

DR. HENRY ROSE CARTER, Birmingham, Ala.: In Guayaquil over 60 per cent. of the rats examined showed icterohemorrhagica. The relation of people with rats in Guayaquil has been very close because bubonic plague was very common there at that time. It was reasonable then that from time to time cases of icterohemorrhagica should arise among human beings in Guayaquil. None had ever been reported there. Some have been since that time. If I had seen them, I should have accepted them as yellow fever unless there had seemed some reason for making a critical examination. The first thing noted when Dr. Nougchi showed me the necropsies of guinea-pigs, rats, etc., killed some by *Leptospira icteroides*, some by *L. icterohaemorrhagica*, was that the results differed in degree but not in kind. I suggested to Dr. Noguchi then that there was a chance of Pareja, who is a good diagnostician, having given him among the cases of yellow fever some of icterohemorrhagica, which might well happen to any man, in atypical cases, and that he (Noguchi) might have been working not with yellow fever but with icterohemorrhagica, and that the thing for him to do was to compare the immunologic characteristics of icterohemorrhagica with those of his *Leptospira icteroides* and see how they compared, and not to use the Japanese strain for this purpose but to use the Guayaquil strain. I knew that there was sometimes a decided difference in immunologic reactions between the different strains. Taking Dr. Noguchi's findings of the serologic reactions of his cultures with yellow fever cases and the icterohemorrhagica cases at their face value, when I went to Peru I felt that I should not hesitate to accept this organism as the cause of yellow fever, and accept it without reserve. I carried down a certain amount of serum which I kept on ice, and I carried vaccine. I had no occasion to use the serum in about twenty-two months' stay. During the time I was in Peru I found no single case in which the physician would allow the serum to be used in which there was the slightest chance of judging of its effect. I have seen a good deal of vaccine given and have given it. But unless one can get two groups of men, and groups of considerable size, the one vaccinated, the other unvaccinated, equally exposed to yellow fever, one cannot judge of the efficacy of vaccination.

DR. W. E. DEEKS, New York: When we obtain good results from the administration of specific serum, it may be the result of the administration of a foreign protein as much as in the antibodies supposed to be contained in it.

DR. HENRY J. NICHOLS, Washington, D. C.: As the question of the etiology of yellow fever has been raised, I wish to go on record for the Army Medical School as accepting *Leptospira icteroides* of Noguchi. I have given a number of injections of vaccine to persons going into yellow fever zones because I think the evidence is enough to warrant us in using all the biologic means at our disposal to combat this disease, and certainly one of these means is vaccine and another serum. To rely on sanitary measures alone would not be doing justice to the situation.

DR. ARISTIDES AGRAMONTE, Havana: Dr. Noguchi knows that the only organism at our disposal was one strain, the "Merida" strain, that he very kindly let us have at Las Animas Hospital in Havana. As I saw the work being carried out by Dr. Lebredo with this organism, I became more and more convinced, from my knowledge of the epidemiology of yellow fever, that this organism could not be the parasite of this disease. I want to say that I am absolutely convinced of the truth of Dr. Noguchi's assertions, and I wish so to declare it now; but unfortunately I have become more and more convinced through reading Dr. Noguchi's literature on the subject that this cannot be the yellow fever parasite.

DR. HIDEYO NOGUCHI, New York: The results of Dr. Cran conform with those of a number of other workers who have used the vaccine and serum during epidemics elsewhere. There is no evidence that the administration of the serum has any unfavorable effect on the patient. The vaccine, likewise, appears to have been useful in reducing case incidence among those who received it sufficiently in advance of exposure (from ten to fifteen days). Statistics may not always be reliable; but, having obtained similar results repeatedly in different epidemics and by different observers, we are inclined to believe that the vaccination protects nonimmunes for a certain length of time (about five to six months). If we include the cases reported by Dr. Cran, the total number of cases treated with serum is 244, in 155 of which treatment was given within the first three days and in eighty-nine after the fourth day of illness. There were 132 recoveries and twenty-three deaths (13 per cent. mortality) among those treated early, as against forty-one recoveries and forty-eight deaths (54 per cent. mortality) among cases treated after the fourth day. Among the cases occurring in the same localities during the same period of the epidemic, the mortality, so far as reliable records could be obtained, ranged from 51 to 100 per cent.

DR. JAMES CRAN, Belize, British Honduras: The theory that Sir James Fowler advanced of yellow fever being endemic in Belize was originally advanced by a local practitioner. The theory was that the three Indians who had developed the disease had been in the habit of going down into the nonimmune part of Belize, and had there contracted the disease. It was pointed out to him that he would have to account for the fourteen original cases, as all of the patients had contracted the disease within five days of one another. In a small place like Belize, where the white or nonimmune part of the town is not differentiated in any way —that is, where the houses are mixed up—I think it would be impossible for a disease with a mortality such as yellow fever has had in the past to lie dormant for any considerable time without taking its toll. The Rockefeller workers and the commission that sat on this epidemic of yellow fever unanimously rejected the theory of town infection. One point I forgot to bring out is that there were 150 inmates in this college exposed to a strong infection for four weeks. Seventeen of them got the infection altogether, but not a single person contracted this disease who had had the vaccine for ten days.

Tropical Mortality and Acclimatization

DR. FREDERICK L. HOFFMAN, Newark, N. J.: The outstanding fact of the tropical mortality problem is the immense decline of the general death rate during the last quarter of a century, as the result of sanitary efforts, based on recognized principles of disease infection. While much remains to be done to reduce the rate to the corresponding prevailing rate of temperate regions, the advances made justify the statement that, broadly speaking, throughout tropical regions the death rate is no longer a bar to effective settlement and colonization. The prevailing mortality rates of tropical regions rarely exceed from 25 to 30 per thousand, including the native population, corresponding to the death rates prevailing in many of the larger cities of Northern regions from twenty-five to thirty years ago. A review of the mortality statistics of Jamaica, for illustration, for a century past, reveals enormous changes for the better. Half a century ago, the death rate of Jamaica rarely fell below 50 per thousand, whereas at present it is usually about 20 per thousand, or a little more. Considering that all but a small fraction of the Jamaica population consists of negroes or East Indians, the prevailing death rate is, on the whole, gratifying evidence of sanitary progress and control. The death rate of Cuba, as late as 1898, was frequently a serious menace to the Southern states. Yellow fever often caused a death rate higher than the prevailing death rate from all causes. Yellow fever has been entirely eradicated, while malaria has been reduced to

very small proportions. Many other diseases have likewise undergone a material reduction. Throughout the West Indies and the Central American tropics, the mortality problem is most seriously complicated by hookworm infection and widely prevailing venereal diseases. Gradually these diseases are yielding to better education, higher standards of morality, and more efficient medical service and sanitary supervision. They are all conditions which are largely within human control and which will yield to the gradual progress of true civilization in the sections affected. The tropics will always involve potential dangers to health and life, not encountered in temperate latitudes. Agriculture is the greatest aid in promoting the longevity of man in tropical countries; as agriculture provides a sufficient food supply and a large variety of food materials, but finally it provides the means of exchange to secure other comforts of existence, all of which minister to health and long life.

DISCUSSION

DR. BAILEY K. ASHFORD, Mayaquez, P. R.: Up to the present, we have not spoken of the mental attitude toward the tropics on the part of temporary residents who visit us from the North. In the North there is a chronic fear of the tropics, and I think we carry that fear to the tropics with us. Another point is our mental or spiritual incapacity to adapt ourselves to the environment. A large number of people are constantly dreaming of home. For that reason a man from the North should have a change of environment every two years, if only for a brief period. The food we eat has a great deal to do with our well being in the hot zone. We must provide more highly cultivated and diverse garden products in the tropics, because today it is almost impossible to get the kind of fresh food we should eat. The next thing is rest. One should be very careful to rest sufficiently to repair the damage of the day, but unfortunately Nature throws most of her charm into the tropical nights, and people are apt to stay up until they are so weary that they are compelled to go to bed. The question of exercise in the tropics I believe is a very important one. A certain amount of exercise is necessary in the tropics, and very few people ever think of it. Heat and humidity have a deleterious effect on people from the North, though not so much as has been painted. On the other side lies the great question of the development of children. All of us who have had children in the tropics know that they should go to the North while they are growing.

DR. W. E. DEEKS, New York: Adults can live and remain in a healthy condition in the tropics, and their children can be happy and develop properly, physically and mentally, provided they are familiar with the conditions that cause disease, know the methods of prevention, and properly apply them. People going from Northern climates to the tropics should adapt themselves to conditions existing there. As far as possible, they should avoid the use of canned foods, with which they are familiar in the North, and learn to prepare properly and eat the foods that grow in the tropics. It is merely an adjustment of themselves to the new conditions.

SIR THOMAS OLIVER, Newcastle-upon-Tyne, England: Dr. Hoffman spoke of the fact that Cuba, a few years ago, was practically impossible to be lived in by the white man. I can point to an instance that is well known to most of you and it is that the Gold Coast of West Africa until recently was regarded as the white man's grave. There conditions today are so much improved that the men from my own country do not hesitate to go to the Gold Coast, for they feel that, with care, life can be lived there with as good chances of enjoying normal health as can be done at home.

Ainhum

DR. A. A. FACIO, Limon, Costa Rica: During the last three years I have seen five cases, and of these not one has shown any lesions or symptoms other than the ones affecting the little toe that would make one think of Raynaud's disease or leprosy. It was impossible to isolate the bacillus of Hansen from the nasal secretions of any of these patients, even after the administration of large doses of potassium iodid. The most striking feature of the roentgenograms is the almost total disappearance of the middle phalanx of the little toe, of which there is only a very small fragment left, and of the proximal phalanx only the proximal end is left at the metatarsophalangeal joint. The soft parts show a constriction amounting to almost complete detachment of the little toe at the digitoplantar fold. The phalanges of the other toes, in the diseased foot as well as those of the sound foot, show atrophic changes. The five cases that I have observed were all in members of the negro race, who belonged to a somewhat scattered community of the same people in which I have detected four cases of leprosy during the last five years, and this certainly seems to add weight to the supposition that ainhum may possibly be an attenuated form of nerve leprosy. One thing that is certainly baffling, at least to me, is why, if similar and even equal amount of sclerosis is found on the other toes, the disease practically always affects only the little toe. The reason for this possibly lies in the anatomic position of the latter, which exposes it to much more constant irritation than the others. During the last three years I have seen and examined three of the patients at various intervals, and none have at any time shown any symptoms of leprosy. The treatment of ainhum consists in a simple amputation of the affected toe above the constriction. The prophylaxis consists in cleanliness and wearing of stockings and comfortable shoes.

DISCUSSION

DR. ALDO CASTELLANI, London: We must come to the conclusion that we know nothing definite about the etiology of this condition. Of one thing I am certain: It is not a manifestation of leprosy. As regards the geographic distribution, we have to transfer this disease from the group of strictly tropical diseases into the group of subtropical and cosmopolitan diseases, because quite a number of cases have been reported from subtropical countries, and I have seen two typical cases in the Balkans and also one typical case in the south of Italy. I am inclined to agree with Dr. Facio that the best treatment is amputation of the small toe as soon as symptoms of this condition appear.

DR. FOSTER M. JOHNS, New Orleans: Recently I saw in the Charity Hospital in New Orleans a case that was provisionally diagnosed as ainhum, in which the middle phalanx of the big toe of both feet had necrosed during a period of about two years.

DR. EDWARD I. SALISBURY, Chicago: I have seen only eight or nine cases, and have amputated no more than five. I have seen ainhum on both the little toes. The pathologic examination of all these cases was made, and no leprosy was found. All findings showed arterial obliteration. It is my opinion that the disease is due to callus which is caused by the patient's going barefooted over long periods of time.

DR. A. A. FACIO, Limon, Costa Rica: To answer Dr. Johns' question, Dr. Chalmers had a case in which all the toes of one foot were affected.

Influenzal Pneumonia

SIR THOMAS OLIVER, Newcastle-upon-Tyne, England: In Newcastle-upon-Tyne there have been within the last thirty years five or six epidemics of influenza. While there might be observed in one epidemic all types of the disease, pulmonary, intestinal and nervous, in another epidemic the pulmonary type predominated and in yet another the nervous system was most affected. It is an interesting fact that no matter in which particular part of the globe the disease appeared, the malady exhibited in all places the same tendency to variation, a circumstance which makes it possible to discard the theory that environment plays a leading part in causing diversity of type. In many instances the march of the disease could be followed not only from country to country, but from continent to continent. When influenza appeared in Jamaica in October, 1918, it was the prevailing opinion that the disease had entered the island by the North Coast, having been brought thither by sailors from American ports, and so rapid was the spread of the epidemic that by the following month 70,000 persons were ill, of whom 3,641 died, the chief cause of death being septic bronchopneumonia. After having inflicted this damage the disease rapidly disappeared. Just how much is to be included under the term influenza it is difficult to say, for the malady is probably not

the result of the operation of a single microbe. In a series of examinations carried out by Dr. Bernard Show, assistant to the professor of pathology, University of Durham College of Medicine, Pfeiffer's bacillus was found in only one out of fifteen cases. In influenzal pneumonia, the pulmonary lesions show little resemblance to typical pneumonia. Apart from conditions present in the bronchi, the lesions in the lung are exudative and of a serosanguinolent nature, and they are also interstitial. In an examination of microscopic sections, the striking features are the marked destruction of the mucous membrane of the bronchioles, the disappearance of the epithelial lining followed by softening and destruction of the bronchiolar muscular fiber. Like the epithelial lining of the mucous membrane of the bronchioles, that of the pulmonary alveoli is also destroyed. In the severe types of influenza there are two incidents that stand out prominently, and these are the profound toxemia, by which is probably to be explained the early delirium that develops in some patients; also the deep cyanosis with rapid heart failure, and toward the relief of which medicine heretofore has been of little avail.

DISCUSSION

DR. WILLIAM H. PARK, New York: We had a very interesting experience of the spread of influenza in a little mountain resort in New York State. There had been no influenza there. One of the farmers went to the city, where influenza was raging, and after a day's visit he returned to the mountain resort. He developed influenza within two days. Within three days two of his children were sent home from school because of symptoms of influenza, and in two more days other school children came down.

DR. F. L. HOFFMAN, Newark, N. J.: Brownlee discovered that influenza epidemics run in cycles of sixty-six weeks, but do not develop into epidemics of serious importance unless more or less unknown meteorological factors coincide.

SIR ARTHUR NEWSHOLME, Surrey, England: There is something to be said in favor of the sixty-six weeks internal theory of Dr. Brownlee of London, but this does not account for the occurrence of the pandemics of 1891 and of 1918. There is another point that cannot be accounted for by epidemic; that is, that during the epidemic of 1890-1891, the part of the population most seriously affected were the older people, 50 years of age or over, while, in the pandemic of 1918, mortality fell especially among the men and women in early manhood and womanhood. It suggests that the epidemic of 1891 was a different disease from that in the recent great pandemic, though I think it was the same disease.

DR. MILTON J. ROSENAU, Boston: Experiments have convinced us that Pfeiffer's bacillus is not the cause of influenza, and that the disease apparently is not spread by secretions from the mouth and nose.

DR. SEALE HARRIS, Birmingham, Ala.: We in the South ordinarily trace our epidemics to New York, and from there the infection is carried on railways to other sections of the United States. I have heard this explanation suggested of the age periods affected by the large epidemics: that a generation arises which has not had influenza and then when it sweeps over the country it gets the younger generation of nonimmunes.

DR. W. E. DEEKS, New York: A supply of mercurochrome-220 soluble was sent to each of our hospitals with the request that it be tried in all septic conditions which did not yield to any other specific treatment. Among the cases which have given brilliant results by its use are those of postinfluenzal pneumonia.

Preferential and Compulsory Breeding Places of Aedes (Stegomyia) Aegypti and Their Limits

DR. H. R. CARTER, Washington, D. C.: The one absolute material requisite for the breeding of mosquitoes of all kinds and in every place is water. Fruitful oviposition of this insect then, in nature, takes place only in relation to water: (1) present at the time of oviposition for such as deposit their eggs only in water; or (2) water in the future for such as deposit their eggs in places free from water, but which will be covered by it at the proper time for them to hatch. When breeding places of the preferred kind are not available, this mosquito will deposit eggs in other collections of water, although it may be not in all classes of such collections. As long as the mosquito has easy access to a sufficiency of breeding places of election, she will not seek to deposit eggs in any other. It may be advisable, then, to provide her with such breeding places of election. Control of mosquitoes by measures that allow of oviposition in their preferential breeding places may be the preferential method to adopt.

DISCUSSION

DR. ARISTIDES AGRAMONTE, Havana: A means that has been carried out perhaps for the first time in Santiago, Cuba, for combating the breeding places of mosquitoes under conditions in which the people had to keep reservoirs consisted of the introduction of one or more fish into the various receptables, employing the varieties of *Gambusiae,* which destroyed the larvae in such places.

Prevention and Treatment of Amebic Hepatitis and Liver Abscess

SIR LEONARD ROGERS, London: During the last two decades, advances in our knowledge of the etiology, prevention and care of amebic liver abscess have been made which have scarcely been surpassed by those of any other branch of tropical medicine. Amebic dysentery, so far from being unknown in India, has been, in fact, quite common in Calcutta; large tropical liver abscesses occurred only secondarily to amebic dysentery and never in the bacillary form; but they occurred most frequently in latent forms of amebic bowel disease with a slight ulceration limited to the cecum and ascending colon. As early as 1902 I found by experiment that quinin dihydrochlorid, 1:100, rapidly rendered the living amebas both immobile and caused their protoplasm to become granular, and I advocated aspiration and injection of quinin into the liver abscess cavities after removing as much pus as possible, in place of the open operation. Tropical hepatitis, even in the absence of dysentery, is due to latent amebic infection of the upper colon, and ipecac is a specific against amebic disease, and thus cuts short the source of infection of the liver by healing the amebic ulcers in the large bowel. The treatment of amebic liver abscess consists of aspiration, without drainage, and the administration of ipecac or emetin. The good effect of ipecac and emetin in reducing the mortality after the open operation is evident from the steady fall in the case mortality in the British army in India.

Can We Get Better Anopheles Control and More Malaria Control at Less Cost?

MR. J. A. LEPRINCE, Memphis, Tenn.: While we have considerably increased the output of some industries in our Southern states by malaria elimination, we have not yet taught most of our business men and financial interests that it is folly to attempt development of natural resources in malaria countries without taking proper precautions.

DISCUSSION

DR. HENRY R. CARTER, Washington, D. C.: In the United States we place great stress on the economic value of malaria control, perhaps more than on its sanitary value. We do not speak of the elimination of malaria, but if one can get it from 50 per cent. down to 5 per cent. in a year, or even to 2 per cent. or 0.5 per cent., one controls the disease, and that can be done. If we can get a place in which the business men are interested in having work done, and the men we send there know the facts about malaria, we can nearly always raise sufficient funds to do malarial control, and the work has always been successful from a financial point of view.

Blackwater Fever

DR. J. W. W. STEPHENS, Liverpool: Blackwater fever may occur in a European arriving for the first time in the tropics as early as six weeks after his arrival. It may occur as late as a year after he has left the tropics. Second attacks (or more than two) occurred in about 5 per cent. of the cases in Panama. The figure for Nigeria is about 20 per cent. Ten or more attacks in the tropics are not very uncommon. Recurrences while in the hospital are a peculiar and puzzling phenomenon. About 10 per cent. perhaps expresses the frequency. The interval between the first attack and the recur-

rence may be as long as twelve days, or often where the recurrences are numerous only a few hours. Posthemoglobinuric fever is an obscure condition, apparently not uncommon, of a fever sometimes severe, lasting many days after the hemoglobinuria cases.

Some Aspects of Tropical Medical Work

DR. A. E. HORN, London: The problems in preventive and curative medicine that are present in various parts of the tropics are somewhat of the nature of a kaleidoscope. Some of the elements may be missing from certain areas, but the complex retains the greater number arranged in different patterns so that one or another feature attains a predominance, and more urgently demands attention than the remainder. Not only is this the case for different places, but it is equally so for different periods, a turn of the kaleidoscope converting the unobtrusive parts of one view into the insistent features of another, when a smoldering endemic disease lights up into epidemic outbreak. Malaria is ever present in the background with rare exceptions, such as Fiji, where, for some imperfectly understood reason, the malaria-bearing *Anopheles* is absent—a state of affairs shared by the island of Rodriguez about 350 miles from Mauritius in the Indian Ocean. But whereas Rodriguez receives protection against steamer-borne mosquitoes by its coral reefs, which keep the ocean-going steamers at a safe distance of 5 or 6 miles from its shores, there appears an appreciable risk of deep sea steamers bringing the fateful *Anopheles* from other lands to Fiji, where steamers moor alongside at Suva. In Mauritius, apparently following the introduction of malaria mosquitoes, more than 30,000 deaths occurred from fever alone in one year. Horn regards a maximum amount of 30 grains (2 gm.) of a quinin salt in solution, taken by mouth during twenty-four hours, as curative of most attacks of malarial fever. However, a preliminary or accompanying early saline purge is almost a sine qua non, while it is obvious that if an inflamed and irritable stomach cannot retain the drug, another method must be tried.

DISCUSSION

DR. CHARLES A. KOFOID, Berkeley, Calif.: We should determine the time in the life cycle of the parasite at which treatment for malaria should be given. The period of greatest susceptibility of any organism is in its early stage of development following fertilization of the egg. It is possible that in the case of the malarial parasite this period recurs at sporulation when the merozoites are young.

SIR JAMES K. FOWLER, London: I doubt whether a disease known in historical times has ever been absolutely "eradicated" or removed from the surface of the earth. It may be destroyed locally.

SIR LEONARD ROGERS, London: It is not possible to lay down any general rule to deal with malaria in all parts of the world. We should learn from the experience of others and not limit ourselves to one routine method of treatment.

DR. FRIEDRICH MUEHLENS: Many experiences during and after the war demonstrated the fact that malaria can be introduced into regions where *Anopheles* mosquitoes exist. In northern Germany, in the country of Emden, where *Anopheles maculipennis* is very numerous, in the last two years of the war we had about 4,000 cases of tertian infections; also, in Berlin, in the surroundings of which *Anopheles* is widespread, in the last years of the war about fifty cases of estivo-autumnal infections were found. In Dalmatia (Serbia), in localities previously free from estivo-autumnal infections, these infections were introduced by carriers of parasites who returned from the war.

Leprosy

SIR ARTHUR NEWSHOLME, Surrey, England: The course of events in leprosy is instructive in its bearing on the future control of this disease and of tuberculosis. It is scarcely necessary to decide between the relative merits of domiciliary and institutional prevention of infection, though the superiority of the latter is undoubted. Every attempt should be made to secure both; and now that in leprosy there is great hope of cure of the disease, the motives for concealment of cases have in large measure disappeared, and we may reasonably anticipate through treatment in suitable institutions a more rapid success in the diminution of this disease in tropical countries.

Histopathology and Hematology of Experimental Yellow Fever

DR. HENRY R. MULLER, New York: In young guinea-pigs, young puppies and a monkey (*Cebus macrocephalus*) experimentally infected with yellow fever, the histologic changes, although varying in degree, are similar to those found in human cases. In experimental yellow fever in guinea-pigs, a steady and persistent leukopenia of moderate degree during the course of severe infections is the rule. In occasional instances, an initial or a preagonic leukocytosis may be present. In extremely mild infections there may be a slight leukopenia, or a mild leukocytosis during the febrile period, according to the individual case. The number of red cells usually remained within normal limits, although a marked reduction occasionally took place, and in some instances there was even a slight increase. The hemoglobin was generally normal. In some animals, it was a trifle below the normal. These findings are similar to those of yellow fever in man.

Action of Certain Biologic, Chemical and Physical Agents on Cultures of Leishmania; Some Observations on Plant and Insect Herpetomonads

DR. HIDEYO NOGUCHI, New York: The strains of *Leishmania* studied grew well when the hydrogen ion concentration of the medium was within the range of p_H 6.8 to p_H 7.8. Certain phytotoxins and plant toxalbumins and a number of animal poisons kill *Leishmania* cultures. Antimony and potassium tartrate was found to be only slightly germicidal for *Leishmania* in vitro, a 1:100 solution being required to kill them. Brief contact with fresh animal tissues or intravenous introduction into rabbits did not transform it into a more potent germicide for these organisms. Arsphenamin and neo-asphenamin have been similarly studied, and both showed a native disinfecting power nearly ten times as great as that of antimony and potassium tartrate. Several other organic compounds of arsenic and bismuth have been studied, but the results were even less informing: Bismuth tartrate seemed to acquire slight leishmanicidal power after treatment with fresh tissues or injection into the animal body. The photodynamic properties of certain fluorescent dyes have long been known, and fluorescence and photodynamic action were thought to be closely associated. In the present study, flagellates and spirochetes were rapidly killed by extraordinarily dilute and otherwise inactive solutions of certain germicidal dyes in the presence of actinic rays. Neither the solutions nor the rays alone harmed the organisms, and the dyes did not seem to have been converted into a germicide of greater potency, since solutions exposed to the rays without the simultaneous presence of the micro-organisms did not become germicidal. The occurrence of the phenomenon required the simultaneous presence of the dye in high dilutions, the micro-organisms and actinic rays, and is therefore somewhat different from the so-called photodynamic action of certain fluorescent dyes in which the formation of peroxid in the presence of ordinary light is said to play a part. The phenomenon does not occur with any of the well known photodynamic fluorescent dyes—eosin, erythrosin and fluorescein—not one of which was either inherently or photodynamically germicidal for the flaggelates. Neutral acriflavine killed *Leishmania*, *Spirochaeta*, *Spironema* and *Leptospira* in a dilution of 1:50,000 without the aid of a special light, and in a dilution of 1:10,000,000 with the aid of actinic rays. An arc lamp or the sun's rays furnish all the actinic energy required for this action. Rays filtered through a red, orange or yellow screen exert no photodynamic action on the dye solution, but those passed through a blue filter act most energetically. The fact that neutroflavine is well tolerated by man, remains in the circulation active for many hours, possesses a strong inherent antiseptic property and, above all, the unusually powerful photodynamic sterilizing quality in a dilution as high as 1:10,000,000 makes it highly promising as an agent for the treatment of certain protozoon diseases associated with chronic ulcers.

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Journal of Public Health, Detroit

14: 735-818 (Sept.) 1924

State Societies of Sanitarians. H. N. Calver, New York.—p. 735.
Trend of Maternal Mortality Rates in United States Death-Registration Area, 1900-1921. R. M. Woodbury, Washington, D. C.—p. 738.
Relation of Hospital and Dispensary to Public Health Movement. M. M. Davis and A. N. Thomson, New York.—p. 744.
Mosquito Control. M. Z. Bair, Boston.—p. 746.
Iodin Content of Michigan Water Supplies. E. F. Eldridge.—p. 750.
Place of Teacher in School Health Program. M. A. Brown, Boston.—p. 754.
Water Supplies and Purification. G. W. Fuller, Boston.—p. 757.
Occupational Disease and Workmen's Compensation Laws. F. L. Rector, New York.—p. 763.

American Journal of Medical Sciences, Philadelphia

168: 313-468 (Sept.) 1924

*Cause of Death in Diabetes Mellitus. R. Fitz and W. P. Murphy, Boston.—p. 313.
*Herpes Zoster in Hodgkin's Disease. H. K. Pancoast and E. P. Pendergrass, Philadelphia.—p. 326.
*Effect of Malaria on Nervous System. C. B. Masson, Washington, D. C.—p. 334.
*Relation of Fungi Imperfecti to Diarrheal Conditions. M. S. Fleisher and M. Wachowiak, St. Louis.—p. 371.
*Mycotic Aneurysm, Gonococcal and Pneumococcal in Origin. B. W. Reifenstein, Syracuse, N. Y.—p. 381.
*Human Dying Heart. M. H. Kahn and I. Goldstein, New York.—p. 388.
Surgery of Pulmonary Tuberculosis. J. Alexander, Ann Arbor, Mich.—p. 412. To be Cont'd.

Cause of Death in Diabetes Mellitus.—From 1913, when the Peter Bent Brigham Hospital first opened, until Jan. 1, 1923, the diagnosis of diabetes mellitus was made in 562 cases admitted to the medical wards. Of these, sixty-four died in the hospital. One interesting fact brought from study of the records by Fitz and Murphy is that the mortality was not constant from year to year but showed a surprising variability. The annual mortality of the new cases varied between 2 and 12 per cent. with an average mortality of 9 per cent. Therefore, conclusions in regard to the value of treatment as it affects the hospital mortality of diabetes may be of dubious value. On the basis of this study, Fitz and Murphy present the following conclusions: There were four common causes of death in the cases of this series and they represent the common causes of death in diabetes described by other authors. These causes are: coma, sepsis, cardiovascular disease, including gangrene and pulmonary tuberculosis. Many diabetic deaths can be prevented and many diabetic lives can be happily prolonged if these causes are generally recognized and prevented or treated in their early development. A serious effort should be made through education to protect diabetic patients from the dangers of coma, sepsis and gangrene. Diabetic coma should be recognized at the time of its onset and treated before a terminal infection develops. Diabetics with cardiovascular and renal disorders should be as systematically treated for diseases of the heart, kidney or arteries as for diabetes. Pulmonary tuberculosis complicating diabetes should be discovered before it becomes hopelessly advanced, and both diseases, when coexistent, should be treated hopefully and vigorously.

Herpes Zoster in Hodgkin's Disease.—Pancoast and Pendergrass record four cases of herpes zoster occurring in Hodgkin's disease and one case of herpes zoster occurring in sarcoma of both ovaries. One patient died of Hodgkin's disease, the zoster occurring rather late in the affection. In four cases which are still under observation, the zoster occurred rather early in the course of the disease in three and late in the other. Judging from these cases alone, it would seem that the severity of the disease had nothing to do with the eruption but that the herpes was probably due to irritation caused by mass of glandular enlargement in close proximity to the ganglion. The occurrence of herpes zoster in Hodgkin's disease, as well as in other malignant growths, is frequent enough to justify its inclusion among the skin manifestations in Hodgkin's disease.

Effect of Malaria on Nervous System.—In five definitely psychotic patients, Masson has observed attacks of frank malaria, and in the hospital records he found seven similar cases. Four of the twelve cases were diagnosed tertian malaria from blood smears, while the remaining number were not typed. The mental examination of these patients was incomplete and amounted to a casual observation of their status, sufficient, however, to assure one that the malarial infection neither ameliorated nor aggravated their mental symptoms, nor added to those already present. However, from the foregoing, the heredity or acquired nervous or mental imbalance factor in malarial psychoses appears to assume none the less an important rôle, explained on the following basis: These patients had made a hospital adjustment and were not so easily disturbed by a toxic agent which, to one fighting life's battles with an inferior nervous system and personality make-up, might have proved the last added force needed to take them out of reality.

Relation of Fungi to Diarrhea.—From a series of thirty-two cases studied culturally Fleisher and Wachowiak have isolated fungi from the stool in twenty cases and from the blood in some. The twenty cases in which fungi imperfecti were found can be divided into several groups: (1) a series of cases which were definitely diagnosed as tropical sprue, seven having originated in Korea and one in Mexico; (2) a group of cases in which there was either a chronic diarrheal condition or an ill-defined gastro-intestinal disturbance; (3) a group of cases in which there was an acute diarrheal condition but which, however, usually cleared up in brief time.

Mycotic Aneurysms.—The etiologic factor was determined by Reifenstein with fair accuracy in two cases of mycotic aneurysms. One case due to the gonococcus was insidious in onset, protracted in duration and presented all the classical signs and symptoms of a septicemia; the other due to the pneumococcus was of an acute nature and gave but relatively few localizing signs.

Studies on Human Dying Heart.—Kahn and Goldstein report on the study of the dying human heart in seven cases. Records were obtained for some time previous to and during the various stages of death. In all the cases all or some of the last electrical complexes which followed the period of clinical death were obtained. In all the cases, the first and main effect was failure of the sinus control of the heart action, with assumption of the control by the auriculoventricular node. This is without doubt the most significant phenomenon in terminal heart activity. It is also in correspondence with the significant findings under experimental conditions. The cessation of the normal auricular contraction stimulus seems to be the critical phenomenon in the process of death. Before this happens, the sinus node shows irritability and depression in various sequences and degrees and it is probable that if the disturbance could be controlled before cessation of sinus function, recovery of the heart might occur. After this happens, it is known experimentally that the heart will not recover although reoxygenated. Although ventricular extrasystoles are a common occurrence in the dying heart under experimental conditions, they were encountered in only two of the cases reported. In one of the cases, they existed long before death and in the other, they occurred suddenly from various points in the ventricular muscle just at the time vagus effects were most notable, suggesting vagus influence as the cause. Ventricular fibrillation occurred in two cases. In one instance, it was only momentary and in the other more prolonged. In both, this was followed by a very short period of recovery of rhythmic ventricular action, but without any regularity. The ventricles stopped beating before the auricles in three cases. In the other three, auricular action ceased first. It is usual in the human dying heart that the electrocardiogram will continue to show evidence of activity without there being any visible or audible evidence of ventricular systole. As a result of this study, Kahn and Goldstein call

attention to the greater importance of the earlier phenomena in the auricles as compared with those that occur later in the ventricles, when the conditions are beyond recovery.

Archives of Ophthalmology, New York

53: 411-516 (Sept.) 1924

Perithelioma of Upper Eyelid. N. R. Donnell, St. Louis.—p. 411.
*Ophthalmia in Rats on Rations Deficient in Vitamin A. A. M. Yudkin, New Haven, Conn.—p. 416.
*Accommodation. L. Johnson, Durbar, S. Africa.—p. 426.
Infection After Needling. R. I. Lloyd, Brooklyn.—p. 431.
Treatment of Trachoma with Strong Solutions of Silver Nitrate. N. R. Donnell, St. Louis.—p. 433.
Iridocyclitis Sympathica After Irridectomy for Glaucoma. C. W. Tooker and H. D. Lamb, St. Louis.—p. 439.
Case of Chloroma of Orbit. C. Barnert, New York.—p. 454.
Necropsy of Case of Bilateral Glioma Retinae with Gliomatous Involvement of Iris. A. Knapp, New York.—p. 470.
New Unit of Visual Acuity. L. de Blaskovics, Budapest, Hungary.—p. 476.

Ophthalmia Due to Avitaminosis.—Yudkin asserts that the experimental ocular disturbance in the albino rat is due to lack of vitamin A in the diet and if a second element is missing, the condition is more fulminating. It seems as though the protective substances in the secretions of the para-ocular glands are so diminished as a result of the insufficient diet that the avirulent bacteria constantly found in the culdesac take advantage of the situation and a pathologic picture of a progressive low grade infection is present. The rapidity of the development and the degree of destruction probably depend in large part on the normal storage of the missing vitamin, the type of bacterial infection, the breaking down of the normal mechanism of the intestinal tract and the immunity of the body against secondary infection because of the diminution of the platelets and antibodies or their like in the blood stream.

Nature of Visual Accommodation.—What happens during the act of accommodation is described by Johnson as follows: The two ciliary muscles (the radiating and the circular muscles) contract and their combined action drags forward the choroid and at the same time squeezes up the ciliary processes and pushes them into the circumlental space with the help of the circular muscle of Müller. This tends to compress the fluid in this space. But fluids are incompressible, so something has to give way. This can only be the capsule which is forced inward compressing the lens round its circumference, and thus causing the two surfaces to bulge. The posterior surface cannot be displaced backward because it rests against the incompressible vitreous. So it must bulge forward. But here it presses against the equally incompressible aqueous. What happens? Right around the angle between the base of the iris and the cornea are a number of spaces or clefts between the fibrous tissue, known as the spaces of Fontana. There is also a tiny circular canal known as the canal of Schlemm. When pressure is put onto the fluid in the circumlental space, as the lens cannot bulge backward because there is no outlet for the vitreous, it must bulge forward. This is effected by some of the aqueous flowing into these spaces of Fontana, in fact that is the reason for their being there. The moment accommodation is relaxed the fluid runs back again into the chamber.

Atlantic Medical Journal, Harrisburg, Pa.

27: 779-911 (Sept.) 1924

*Pernicious Anemia. A. Stengel, Philadelphia.—p. 779.
Polycythemia. E. Weiss, Philadelphia.—p. 784.
Blood Transfusion. H. W. Jones, Philadelphia.—p. 788.
Basal Metabolism in Various Diseases. H. K. Mohler, Philadelphia.—p. 793.
Foreign Bodies in Respiratory Tract and Esophagus. E. J. Patterson, Pittsburgh.—p. 797.
Points of Contact Between Internal Medicine and Psychiatry. E. A. Strecker, Philadelphia.—p. 801.
Importance of Expert Diagnosis in Acute Rheumatic Fever. W. E. Robertson, Philadelphia.—p. 808.
Present Status of Vestibular Tests from Standpoint of Otologist. L. Fisher, Philadelphia.—p. 811.
Diagnosis and Treatment of Chronic Maxillary Sinusitis. J. B. McMurray, Washington, Pa.—p. 815.
Vincent's Angina. G. R. S. Corson, Pottsville, Pa.—p. 820.
Indications for Tonsillectomy. J. C. Gittings and A. G. Mitchell, Philadelphia.—p. 823.
Ambulatory Treatment of Gastric Ulcer. M. E. Rehfuss, Philadelphia.—p. 830.
*Management of Carcinoma of Stomach. J. Sailer, Philadelphia.—p. 836.
Mongolian Idiocy; Two Cases in Same Family. Z. R. Scott, Pittsburgh.—p. 841.
*Bronchoscopic Treatment of Pulmonary Suppurations and Bronchial Asthma. W. F. Moore and R. M. Lukens, Philadelphia.—p. 843.

Germanium Dioxid in Pernicious Anemia.—Germanium dioxid was used by Stengel, hypodermically or by mouth, in doses varying from 0.1 to 3 mg. per kilogram in 13 cases. In the earlier period of study, some of the cases received relatively small doses hypodermically. Later, larger amounts were used hypodermically and, finally, massive doses by mouth. Not the slightest result was obtained in any of the cases of anemia or in normal periods. Stengel says he is at some loss to understand some of the published results showing marked improvements of the blood picture after administration of this drug. He has abandoned its use.

Carcinoma of Stomach.—Sailer says that while there is no way of curing carcinoma of the stomach at the present time, there is no reason to despair for the future. It is possible that extensive gastrectomy should be abandoned and surgery confined to palliative operations; but in view of the fact that errors in diagnosis are possible, palliative operations should be done whenever they offer reasonable hope of improvement. Morphin is the only drug that is certain to comfort the patient.

Bronchoscopic Treatment of Pulmonary Suppurations.—Moore and Lukens are of the opinion that aspiratory infection is the most common cause of pulmonary suppuration. The contention, that infarction usually takes place, of which one of the cardinal early symptoms is expectoration of bright red blood, which it is said may often be confused with secondary hemorrhage following tonsillectomy, has not been borne out by the history records of the cases of post-tonsillectomic lung-suppuration analyzed by the authors. Some observers have inferred from roentgenograms taken after injections of bismuth suspensions made through a bronchoscope that the actual abscess cavity was usually smaller than had previously been supposed. Opinion at the Bronchoscopic Clinic is that the reverse is the case, and that involved areas are really larger than indicated by opaque mixtures, because the so-called cavity is filled with granulations that prevent the opaque mixture from extending fully out to the periphery of the suppurating area. After treating many of these cases the authors have concluded that the use of one method to the exclusion of all others is a mistake. Suitability of the case for bronchoscopic examination and treatment must be determined on the broadest scientific principles, not only for the best interests of the particular case under observation, but for the development to the fullest extent of criteria by which suitability can be determined in future cases. Bronchoscopic treatment consists of draining the affected area after thorough aspiration. The cleansing is done with a special solution containing: trinitrophenol, 2 grains; Lugol's solution, 1 dram; physiologic sodium chlorid solution, 1 pint. An analysis of the cases of pulmonary abscess treated at the clinic, including those complicated with bronchiectasis, is as follows: cured, 21.4 per cent.; improved, 57.2 per cent.; unimproved, 21.4 per cent.

Boston Medical and Surgical Journal

191: 617-658 (Oct. 2) 1924

Relation of Obstetrics to Preventive Medicine. W. E. Studdiford, New York.—p. 617.
Medico-Social Aspects of Heart Disease. B. L. Russell.—p. 634.

California and Western Medicine, San Francisco

22: 423-479 (Sept.) 1924

Acute Pancreatitis. J. H. Woolsey and G. D. Delprat, San Francisco.—p. 423.
*Psychologic Factor in Enuresis. D. H. Gibbs, Los Angeles.—p. 427.
Goiter Survey in Utah. J. Wallace, Salt Lake City.—p. 431.
Case of Congenital Synotosis of Radius and Ulna. C. B. Bennett, Berkeley.—p. 435.
*Poliomyelitis; Treatment with Rosenow's Serum. F. B. Clarke, Long Beach.—p. 437.
Influence of Medical Work in Obstetrics. A. Taylor, San Francisco.—p. 442.
Some Occular Manifestations of Disease Processes. A. Gumbiner, Los Angeles.—p. 443.
Case of Epithelioma of Hand. W. A. Perkins, Berkeley.—p. 448.

Modern Medicine and the Public Attitude. R. W. Langley, Los Angeles. —p. 451.
*Disturbed Metabolism as Background for Disease. L. Langstroth, San Francisco.—p. 453.

Psychic Treatment of Enuresis.—Gibbs says that since enuresis is essentially a failure of the higher centers to control reflex bladder contraction, the major part of the treatment should be directed toward these higher centers. The success of any method of treatment is due, for the most part, to its psychic effect. After removing the underlying cause and its contributing factors, the habit of unconsciously emptying the bladder must be corrected.

Serotherapy of Poliomyelitis.—During the epidemic of 1916, in Yellowstone County, Montana, Clarke observed twenty-four cases of poliomyelitis, eighteen of which were treated with Rosenow's serum. In this series of cases there was one death. The number of patients with paralysis was eight, or 47 per cent., and the number recovering without paralysis was nine, or 52 per cent. Of the eight cases paralyzed, five were moderately severe and three were very mild. Either the administration of Rosenow's serum was of value, or the disease was unusually mild.

Disturbed Metabolism and Disease.—Langstroth's experience leads him to believe that metabolism is influenced in a qualitative sense by food, exercise, personality adjustment, and sun exposure. Improper balance among these or failure of one or more of them leads to fatigue, lowered resistance to infection, and to degeneration. This state is often the background on which many disease pictures arise and a proper conception of its causes leads to a rational plan of treatment. Restriction of the caloric intake to the approximate metabolic needs, by elimination of starch and sugar and substitution of such vitamin-containing foods as milk, fresh cooked vegetables, and raw fruits, results in increased tissue health. This is manifested by lessented fatigue, increased resistance to infection and regression of beginning degenerative processes. Exercise when carried out by an individual so balanced that it does not result in fatigue of isolated muscle groups is a powerful adjunct to proper feeding in promoting normal tissue metabolism.

Journal of Experimental Medicine, Baltimore

40: 281-404 (Sept.) 1924

*Lesions in Rabbits from Virus Encountered in Attempted Transmission of Varicella. T. M. Rivers and W. S. Tillett, New York.—p. 281.
*Partial Occlusion of Pulmonary Aorta and Interior Vena Cava with Metallic Band. Changes in Vessel Wall and Heart. M. R. Reid, Baltimore.—p. 289.
*Partial Occlusion of Aorta with Silk Sutures, and Complete Occlusion with Fascial Plugs. Effect of Ligatures on Arterial Wall. M. R. Reid, Baltimore.—p. 293.
*Soluble Specific Substance of Pneumococcus. II. M. Heidelberger and O. T. Avery, New York.—p. 301.
*Twort-d'Hérelle Phenomenon. C. Ionesco-Mihaiesti, Baltimore.—p. 317.
*Influence of Suprarenal on Thymus. I. Regeneration of Thymus After Double Suprarenalectomy in Rat. H. L. Jaffe, New York.—p. 325.
Chemical Nature of Residue Antigen Prepared from Yeast. J. H. Mueller and J. Tomcsik, Boston.—p. 343.
*Persistence of Inspired Bacteria in Lungs of Alcoholized Mice. E. G. Stillman, New York.—p. 353.
Effect of Fatty Acids on Resistance of Mice to Transplantel Cancer. W. Nakahara, New York.—p. 363.
*Cardiovalvulotome. C. S. Beck and E. C. Cutler, Boston.—p. 375.
*Toxic Substance in Blood and Urine of Patients with Scarlet Fever. J. D. Trask, Jr., and F. G. Blake, New Haven, Conn.—p. 381.
Microbic Virulence and Host Susceptibility in Paratyphoid-Enteritidis Infection of White Mice. V. Effect of Diet on Host Resistance. L. T. Webster and I. W. Pritchett, New York.—p. 397.

Experimental Varicella.—During attempts to infect rabbits with the virus of varicella, an active transmissible agent has been encountered by Rivers and Tillett which partakes of the characters of the so-called filterable viruses. The pathologic changes produced by this virus are similar to those deemed characteristic of a certain well known group of filterable viruses.

Experimental Constriction of Blood Vessels.—The results of applying bands to the pulmonary artery and vena cava are presented by Reid. In dogs a constricting metallic band does not affect the integrity of the wall of the vena cava, whereas it leads to a rapid death of the wall of the aorta, and, as evidenced by a single instance studied, to a much slower death of the pulmonary artery. In this instance, constriction of the common pulmonary artery by an aluminum band for a period of two and one-half years led to a right ventricular hypertrophy.

Occlusion of Aorta with Fascial Plugs.—Partial or complete occlusion (either by a metallic band or ligature) of any large artery invariably results in a local death of the vessel wall. Experiments were performed by Reid in order to find a method of producing a partial or complete occlusion which would not cause a necrosis. He found that partial occlusion of the aorta of dogs may be produced by Halsted mattress sutures of silk. This occlusion persists. A method of completely occluding the aorta of dogs by means of anchoring fascial plugs in the lumen with silk sutures tied very loosely is described. The vessel wall below and at the site of an occluding fascial plug undergoes marked atrophy. Catgut is dangerous to use for the ligation of large arteries, since it may give way before the necrosed vessel wall becomes completely substituted by fibrous tissue.

Soluble Specific Substance of Pneumococcus.—The method for the concentration and purification of the soluble specific substance of pneumococcus has been improved. Highly purified specific substance of Type II pneumococcus of polysaccharid nature is shown by Heidelberger and Avery to be recovered essentially unchanged after precipitation by immune serum, by uranyl nitrate, by basic lead acetate, or by safranin. Marked chemical differences are shown to exist between the specific substances of Type II and Type III pneumococcus, although both react as polysaccharids. The weight of evidence is considered to be in favor of the view that the specific substances of pneumococcus Types II and III are actually polysaccharid derivatives. The immunologic significance of the foregoing view is discussed.

Bacteriophage in Feces.—The experiments reported on by Ionesco-Mihaiesti were carried out with a lytic principle isolated from the feces of normal rabbits. It seems that bacteriophage is constantly present in the feces of caged laboratory rabbits. It would appear, from the experiments, that the immunization of rabits with the lytic principle results in the disappearance of the bacteriophage from their intestines. All of the immune serums were found to be more or less antilytic. In no case was a strictly specific antilysin obtained.

Suprarenalectomy Causes Hyperplasia of Thymus.—Secondary hyperplasia of the thymus resulting in enlargement of the organ follows, with great constancy, double suprarenalectomy in adult rats. Jaffe believes that the enlargement of the thymus following double suprarenalectomy results from a disturbance of the interrelations between the gonads, the thymus, and the interrenal gland (suprarenal cortex). A possible relationship between the enlargement of the thymus occurring in Addison's disease, exophthalmic goiter, status thymicolymphaticus, and that following double suprarenalectomy is suggested.

Persistence of Inspired Bacteria in Lungs.—Experiments made by Stillman support the previous observations that in mice exposed to a dense spray containing bacteria in suspension, the inhaled organisms penetrate to the smaller bronchi. The further history of the bacteria which have been implanted in the lungs by inhalation depends not only on the kind, number, and invasive quality of the bacteria, but also on the normal defensive mechanism of the host. Pneumococci which have reached the lungs of normal mice as a result of this procedure usually disappear within a few hours and give rise to no generalized infection. In mice intoxicated with alcohol, on the other hand, pneumococci persist in the lungs for a longer period and fatal septicemia frequently follows. Hemolytic streptococci and *Bacillus influenzae* generally persist in the lungs for about twenty-four hours. In intoxicated mice these organisms do not disappear so rapidly from the lungs and generalized infection is much more frequent. The experiments yield no evidence as to how alcoholic intoxication renders the lungs more permeable to inspired bacteria.

Cardiovalvulotome.—An instrument (cardiovalvulotome) is described by Beck and Cutler which actually excises a segment from the mitral orifice and removes this from the blood

stream. The efficacy of the instrument has been tested by its use on the stenotic valves of diseased hearts removed at necropsy. Its feasibility has been shown by operations both on animals and in a single human case.

Toxin in Blood and Urine in Scarlet Fever.—A series of observations made by Trask and Blake on the blood of patients acutely ill with scarlet fever has shown that a toxic substance can be demonstrated in the serum by means of intracutaneous injections of the serum in persons who have not had scarlet fever and whose serums fail to blanch the rash in scarlet fever. The reaction caused by this substance consists of a bright red local erythema, varying from 20 to 70 mm. in diameter, of from one to four days duration. The severer reactions are moderately indurated and tender, and are followed by pigmentation and desquamation. Control injections in persons whose serums blanch the rash in scarlet fever cause no reaction. The toxic substance is not neutralized by mixture with a human serum which gives a negative blanching test but is readily neutralized by a human serum which gives a positive blanching test. It is not neutralized by normal horse serum, but is completely neutralized by scarlatinal antistreptococcic serum of Dochez. In a limited number of observations on the urine of patients with scarlet fever a similar toxic substance has been found in two out of five cases studied.

Journal of General Physiology, Baltimore

7: 1-176 (Sept. 20) 1924

Membrane Equilibria and Electric Charge of Red Blood Cells. C. B. Coulter, New York.—p. 1.
Some Physiologic Actions of Cyanids. J. H. Bodine, Philadelphia. —p. 19.
Combination of Salts and Proteins. J. H. Northrop and M. Kunitz, New York.—p. 25.
Injurious Effects of High Temperatures of Frog Skin. J. W. Klopp, Woods Hole, Mass.—p. 39.
Physical Chemistry of Proteins. III. Relation Between Amino-Acid Composition of Casein and Its Capacity to Combine with Base. E. J. Cohn and R. E. L. Berggren, Boston.—p. 45.
Id. IV. Relation Between Composition of Zein and Its Acid and Basic Properties. E. J. Cohn, R. E. L. Berggren and J. L. Hendry, Boston. p. 81.
Influence of Electrolytes on Stability of Red Blood Corpuscle Suspensions. J. Oliver and L. Barnard, San Francisco.—p. 99.
Critical Thermal Increment for Locomotion of Diplopod. W. J. Crozier, New Brunswick, N. J.—p. 123.
Critical Thermal Increment for Movement of Oscillatoria. W. J. Crozier, New Brunswick, N. J., and H. Federighi, Washington, D. C.—p. 137.
Phototropic Circus Movements of Limax as Affected by Temperature. W. J. Crozer, New Brunswick, N. J., and H. Federighi, Washington, D. C.—p. 151.

Journal of Industrial Hygiene, Boston

6: 169-226 (Sept.) 1924

Medical Provisions of Workmen's Compensation Laws. F. L. Rectour, New York.—p. 174.
Sanitary Problems of South. S. R. Benedict, Birmingham, Ala.—p. 181.
Rehabilitation of Physically Handicapped. R. M. Little, New York.—p. 187.
Industrial Physician and Preventive Medicine. J. Dodson, Chicago.—p. 193.
Silicosis: Modern Factory Health Hazard. J. A. Britton, Chicago.—p. 199.
Nerve Injuries. J. H. Lewis, Buffalo.—p. 203.

Kansas Medical Society Journal, Topeka

24: 251-282 (Sept.) 1924

Laryngeal Tuberculosis. E. G. Ganoung, Salina.—p. 251.
Surgical Evaluation of Abdominal Pain. H. C. Emby, Great Bend.—p. 260.
Use of Ether Intramuscularly in Pertussis. F. E. Dargatz, Macksville, Kan.—p. 262.
Lymphatocostomy. C. S. Newman, Pittsburg, Kan.—p. 263.

Medical Journal and Record, New York

120: 257-308 (Sept. 17) 1924

*Familial Diseases of Locomotion. A. Gordon, Philadelphia.—p. 257.
Dutch Neuropsychiatry and Its Representatives. S. E. Jelliffe, New York.—p. 260.
Reeducation of Muscles in Treatment of Hemiplegics. P. Kouindjy, Paris, France.—p. 266.
Thrombo-Angiitis Obliterans. B. Jablons, New York.—p. 270.
What the General Practitioner Should and Must Know About Hypertension. H. Halpert, Scranton, Pa.—p. 273.
Venous Thrombosis with Advanced Heart Failure. D. Greenberg, New York.—p. 276.
Local Anesthesia for Dental, Oral, Nose and Throat Surgeons. H. E. Tompkins, New York.—p. 279.
Repair of Syphilitic Nose. J. E. Sheehan, New York.—p. lxxxi.
Extensive Syphilitic Necrosis of Frontal Bone Followed Sixteen Years Later by Cancer at Edge of Scar. D. W. Montgomery, San Francisco. —p. lxxxv.
Progress of Italian Syphilographers. C. G. Cumston, Geneva, Switzerland.—p. lxxxvi.
Clinical Significance of Negative Outcome of Complement Fixation Test in Syphilis. S. S. Greenbaum, Philadelphia.—p. lxxxvii.
Diagnosis and Treatment of Syphilitic Exophthalmic Goiter. E. Schulmann, Lyons, France.—p. xc.
Silver Arsphenamin in Treatment of Syphilis. W. A. Whitman, Columbus, Ohio.—p. xciii.
Oculomotor Paralysis of Syphilitic Origin. C. Rosenbaum, New York. —p. xcv.
Bismuth Therapy of Syphilis with Oxybenzoic Acid Compound. H. E. Ahlswede and W. Busch, Hamburg, Germany.—p. xcv.
Fluid Extract of Condurango, in Uterine Hemorrhage. C. W. Maxwell, Philadelphia.—p. 283.

Familial Diseases of Locomotion.—Summing up the present study of disorders of locomotion occurring in one family in one or several generations, Gordon says it must be admitted that the subject is one of structural anomalies created by evolutional disturbances. They are variations from the architectural normal type. They create a predisposition which exists at the time of conception and is therefore transmitted to the product of the latter. The knowledge of the laws of heredity and of the biologic modifications which are the resultant of pathologic modifications of the creating organisms is of paramount value from the viewpoint of eugenics. Familial diseases or defects are governed by the general laws which are identical with those which regulate the transmission of normal morphologic characteristics from the highest to the lowest point of the animal scale. Morbid heredity, as far as familial diseases are concerned, is controlled by the same laws as physiologic heredity.

Military Surgeon, Washington, D. C.

55: 297-424 (Sept.) 1924

*Edema Disease in Haiti. W. L. Mann.—p. 297.
*Serums and Vaccines in War. G. W. McCoy.—p. 329.
*Effects of Daily Exercise on Pulse and Arterial Pressure. V. T. Scott. —p. 334.
Standardization of Biologic Stains. II. Methylene Blue. R. E. Scott and R. W. French.—p. 337.
Requirements. A. P. Clark.—p. 353.
National Guard Medical Regiment in Field Training. L. A. Salisbury, —p. 369.
Military Delinquency. E. King.—p. 387.

Edema Disease in Haiti.—The so-called edema disease in Haiti is prevalent in prisons, and the differentiation of the clinical types—such as the wet, dry and fulminating forms—were first recognized by the medical department of the gendarmerie in the latter part of September, 1919. Native witnesses give evidence that it has been in existence in Haiti for a longer period of time. Mann believes that the edema disease in Haiti is probably closely related to, or identical with beriberi, depending largely on the accepted classification of the latter condition. Yet some of the clinical symptoms presented by the Haitian disorder differ somewhat from those commonly ascribed to beriberi, suggesting that the difference may be due to a faulty cornmeal or rice diet. The primary differences consist in the type of cardiac manifestation and the absence of partial paralysis of the lower extremities. The data obtained from three years of investigation seem to suggest that faulty diet is one of the predisposing causes, but this does not appear to be the determining factor in its epidemiology. It is possible that some condition, or conditions, in connection with the confinement of prisoners to cells, either deprivation of sunlight or lack of exercise, may exert the determining influence in causing this disease. The possibility of a concentration of vitamins, more marked when cooking for a large complement such as in institutions, may cause inequality in the distribution of the vitamin containing food to the individual ration. The probability of this inequality of distribution causing an avitaminotic condition is directly dependent on the surplus of necessary vitamins originally present. The disease is characterized by "swelling"; usually swelling of the feet, which appears first; later the hands, face and abdomen may be involved. After a time this swelling may disappear, and marked loss of weight may

be noticed. Diarrhea or dysentery are also prominent symptoms, followed later by cough and pulmonary complications. The disease is attended by a very high mortality.

Serums and Vaccines in War.—McCoy asserts that the therapeutic use of serums and vaccines did not play an important rôle in the care of our military forces.

Effect of Exercise on Pulse.—The neurocirculatory changes produced by physical training, according to Scott, are: a decrease in standing pulse; a lower diastolic; an increase in pulse pressure; a smaller difference in the reclining to standing pulse, and an increase in standing systolic over the reclining systolic. In a group of men undergoing the same physical training the most efficient systolic pressure will be attained in some men by a decrease and in others by an increase. Physical efficiency is largely brought about by an increase in the tone of the splanchnic vasomotor mechanism.

Northwest Medicine, Seattle

23: 387-440 (Sept.) 1924

Can Organized Profession Prevent State Medicine and Unjust Federal Taxation? R. C. Monahan, Butte, Mont.—p. 387.
Gallstones. L. J. Austin, Kingston, Ont.—p. 389.
Surgical Treatment of Perforating Ulcers of Stomach and Duodenum. E. R. Schmidt, Billings, Mont.—p. 392.
Chronic Appendicitis. F. N. G. Starr, Toronto, Ont.—p. 394.
Radiography of Pneumatized Parts of Skull. M. A. Walker, Dillon, Mont.—p. 397.
Maxillary Sinus. C. W. Pond, Pocatello, Idaho.—p. 401.
Acidosis. C. L. Hawk, Ketchikan, Alaska.—p. 403.
Sprain Fracture of Tubercle of Tibia. T. F. Mullen, Pocatello, Idaho.—p. 407.
Fibromyoma of Uterus. E. B. Pickel, Medford, Ore.—p. 410.
Framingham Health and Tuberculosis Demonstration. R. C. Matson, Portland, Ore.—p. 412.

Oklahoma State Medical Association Journal, Muskogee

17: 215-235 (Sept.) 1924

Causes of Tumors. L. A. Turley, Oklahoma City.—p. 215.
Treatment of Auricular Fibrillation. W. J. Bryan, Tulsa.—p. 219.
Treatment of Diabetes. A. B. Leeds, Chickasha.—p. 223.

Radiology, St. Paul

3: 183-272 (Sept.) 1924

*Pulmonary Tuberculosis as Cause of Pain in Shoulder. T. A. Groover, A. C. Christie and E. A. Merritt, Washington, D. C.—p. 183.
*Roentgenologic Evidence of Spinal Cord Tumors: Three Cases. R. D. Carman and K. S. Davis, Rochester, Minn.—p. 185.
Pathology in Right Upper Abdomen. Value of Roentgen-Ray Signs as Checked by Operative Findings in One Hundred and Sixty-Four Cases. L. J. Carter, Brandon, Manitoba.—p. 189.
*Study of Tumors of Bladder by Means of Pneumoroentgenography. G. E. Pfahler, Philadelphia.—p. 197.
Seeman Spectograph. O. Glasser, Cleveland.—p. 202.
Value of Granger Line in Diagnosis of Disease of Sphenoid Sinus. A. Granger, New Orleans.—p. 208.
Roentgen-Ray Findings in Bone Tumors. H. W. Meyerding, Rochester, Minn.—p. 216.
*Dilatation and Atony of Stomach in Severe Diabetes. R. G. Allison, Minneapolis.—p. 222.
Rational Method for Demonstrating the Heart. P. Eisen, Detroit.—p. 225.
New Bucky Stand. L. K. Poyntz, Portland, Ore.—p. 228.
Hemangioma with Calcification: Roentgen-Ray Findings. H. J. Ravold, St. Louis.—p. 231.
Diaphragmatic Hernia; Nontraumatic. M. I. Bierman, Washington, D. C.—p. 233.
Study of Lymphatic System in Its Relation to High Voltage Roentgen-Ray Therapy. R. T. Wilson and J. B. Johnson, Temple, Texas.—p. 240.
Our Mistakes. E. H. Kessler, St. Louis.—p. 246.
Two Cases of Calcified Atheroma at Arch of Aorta. K. T. Meyer, Evansville, Ind.—p. 250.
Method of Localizing Roots of Teeth, Residual Granulomas or Foreign Bodies. B. S. Gardner, Rochester, Minn.—p. 254.
Primary Carcinoma of Antrum. T. Blum, New York.—p. 255.
Case of Hair Ball. W. M. Carr, Winnipeg, Manitoba.—p. 257.
Case of Giant Colon with Impacted Feces in Sigmoid. C. G. Sutherland, Rochester, Minn.—p. 259.
Granger Mask for Waters' Position. I. S. Trostler, Chicago.—p. 260.
Large Fecolith. S. B. Childs, Denver.—p. 261.

Pulmonary Tuberculosis Causes Pain in Shoulder.—In some cases of shoulder pain Groover, Christie and Merritt have noticed a pulmonary lesion. The pain is usually described as a soreness or ache which is more or less chronic, and while, as a rule, not very acute, is distinctly annoying and interferes to a variable degree with normal activity. When patients are asked to localize the pain they usually grasp the entire curve of the shoulder and are unable to localize it as accurately as do patients with subacromial bursitis. Motion is not restricted, but aggravates the pain, although the pain may not be referred to the joint itself. There is usually some general tenderness on deep pressure. There is no swelling nor atrophy. The lung lesion as seen roentgenographically has the characteristics of chronic pulmonary tuberculosis. The area of involvement is variable. Usually the disease extends high up in the apex and frequently well out to the periphery toward the axilla. Definite thickening of the pleura at the apex can frequently be made out.

Roentgenologic Evidence of Spinal Cord Tumors.—Three cases are reported by Carman and Davis. In the first there was erosion of the lateral processes of the fourth, fifth, sixth and seventh cervical vertebrae on the left side. The appearance in the roentgenogram was that of a bone cyst. In the second case there was a central erosion and cystic appearance of the first three sacral vertebrae. It could not be determined at necropsy whether there was originally a spina bifida which was enlarged by erosion, or erosion of normal vertebrae by the tumor solely. The third case was one of fibroma of cord eroding dorsal arches of eleventh and twelfth dorsal vertebrae, giving the appearance of a traveculated cyst. The spinous process of the eleventh vertebra and a large part of that of the twelfth had been absorbed.

Pneumoroentgenography of Bladder Tumors.—Pfahler asserts that injection of the bladder with air is practical and with proper precautions is harmless. Tumors can be definitely outlined, and when judged by their size, shape, and general character, in conjunction with the clinical history and symptoms, a diagnosis as to their nature can generally be made. Pneumoroentgenography can be used when for some reason a cystoscopic examination is impossible or impractical on account of the field being partly obscured by blood. It is less painful and generally less objectionable to the patient than the cystoscopic examination, and can be carried out wherever there is an expert roentgenologist. Observations of progress during the treatment of carcinoma of the bladder by radiation may be made from time to time by this method.

Atony of Stomach in Diabetes.—In the case cited by Allison atony of the stomach developed and subsided while the patient was undergoing treatment.

United States Naval Medical Bulletin, Washington, D. C.

21: 265-478 (Sept.) 1924

Hematuria. W. S. Pugh.—p. 265.
Toxic Smokes. D. C. Walton.—p. 275.
Anthelmintic Warfare. M. C. Hall.—p. 286.
Goiter. R. Hayden.—p. 294.
Ulcer of Stomach. R. Cuthbertson.—p. 311.
General Significance of Ketonuria. R. A. Cuttings.—p. 334.

Wisconsin Medical Journal, Milwaukee

23: 175-222 (Sept.) 1924

*Obstetric Anesthesia and Analgesia. W. C. Danforth, Evanston, Ill.—p. 175.
Purposes and Benefits of Maternal Welfare. F. L. Adair, Milwaukee.—p. 178.
Early Stages of Chronic Bronchitis. C. N. Meader, Denver.—p. 184.
*Influenzal Meningitis. R. M. Greenthal and G. F. Kelly, Milwaukee.—p. 188.

Obstetric Anesthesia and Analgesia.—Experience has convinced Danforth that at present nitrous-oxid oxygen is the one anesthetic agent yet thoroughly tried which will relieve the pain of the second stage of labor without at the same time interfering with the progress of labor. He believes that chloroform should be eliminated from obstetric practice altogether on account of its known toxicity and its proved harmful effects on the viscera of both pregnant animals and their unborn young, and because of clinical evidence which is in accord with laboratory findings. Ether should be used if gas is not available, and may be used to supplement the effect of gas at the moment of delivery, for operations requiring considerable muscular relaxation of the mother. It may also be used for operations which are expected to consume much time under complete anesthesia on account of some risk of

carbonization of the fetal blood. Such occasions as this are not common in the practice of experienced obstetricians. Danforth urges also the value of some form of hypodermic medication in the first stage as a means of preserving the woman's physical and nervous forces for the second stage. He pleads for making a more general and earnest attempt to decrease the discomforts of women in labor.

Influenzal Meningitis.—Five cases are reported by Greenthal and Kelly. There was no typical clinical picture and the diagnosis was difficult. Examination of the spinal fluid will give the correct diagnosis which is established by the gram-stained slide, the indol test, and the cultural characteristics of the bacilli. From the study of their cases, the authors believe that the disease is usually primary and not secondary to a respiratory infection.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Ophthalmology, London

8: 401-448 (Sept.) 1924

Classification of Diseases of Choroid. M. L. Hepburn.—p. 401.
Rare Form of Retinochoroiditis Possibly Associated with Pituitary Dysfunction. W. G. Laws.—p. 410.
Electrocautery in Treatment of Glaucoma. C. L. Preziosi.—p. 414.
Paralysis of Divergence in Lethargica Encephalitis. E. R. Chambers.—p. 417.

British Journal of Radiology, London

29: 275-314 (Aug.) 1924

Lethal Doses of Roentgen Rays and Radium for Tumors. S. Russ.—p. 275.
Treatment of Climacteric Symptoms by Roentgen Ray Irradiation of Pituitary and Thyroid. J. Borak.—p. 293.

British Medical Journal, London

2: 349-392 (Aug. 30) 1924

*Nerve Anastomoses. C. Ballance.—p. 349.
*Effect of Diet on Caries in Teeth of Children. M. Mellanby, C. L. Pattison and J. W. Proud.—p. 354.
Treatment of Puerperal Sepsis. J. R. C. Canney.—p. 356.
Occlusion of Os Following Surgical Treatment of Uterine and Vaginal Prolapse. J. N. Stark.—p. 358.
Pulmonary Tuberculosis in Childhood. C. Riviere et al.—p. 359.
Industrial Welfare. W. F. Dearden.—p. 368.

Nerve Anastomoses.—Ballance records the results obtained in some experiments in which the facial and recurrent laryngeal nerves were anastomosed with other nerves. The main result of all facial-spinal accessory anastomoses, and often the only permanent one, was associated movements of the face and shoulder, and deformity of the neck and shoulder. Symmetrical, subconscious, emotional movement of the two sides of the face, the movement most desired, most frequently failed to appear; and thus real recovery eluded attainment. The hypoglossal nerve was anastomosed in various ways with the facial. Facial-hypoglossal end-to-side and facial-hypoglossal end-to-end anastomoses were performed; but these left partial or complete atrophy of one half the tongue; so attempts were made to prevent the atrophy of the tongue by bringing a strip of the spinalis across the neck and uniting it end-to-end to the divided distal end of the hypoglossal; or by dividing the descendens noni and uniting the proximal end to the distal cut end of the hypoglossal. The facial-hypoglossal anastomosis gave some excellent results; but for a long time, an indeterminable time, there was associated movement of the face with the act of eating and swallowing; so that in one patient twenty months after operation, and in several monkeys, active movements of the muscles of the corresponding side of the face during a meal were observed. The results of facial-descendens noni anastomosis, of facial-descendens noni and facial-communicans noni anastomoses, facial-lingual anastomosis, and facial-glossopharyngeal anastomosis are shown. Ballance has done one operation in man in which the facial nerve was anastomosed with the glossopharyngeal nerve. The result so far is encouraging. Since the division of the glossopharyngeal nerve there has been no difficulty in swallowing, and during swallowing no movement of the right facial muscles has been observed. There has thus been no indication that protection of the larynx against the entrance of food is impaired. The operation for the cure of paralysis of the vocal cord is also discussed.

Effect of Diet on Caries.—It has been found by Mellanby, Pattison and Proud that when children are fed on a diet which has been shown in the case of puppies to result in the formation of well calcified teeth, then the initiation and spread of caries takes place at a slower rate than in the case of similar children fed on diets not having such potent calcifying activity. The diet giving the best results, besides having the ordinary qualities of a normal diet, is rich both in calcium and in the calcifying vitamin, and contains comparatively little cereal, none of which is in the form of oatmeal.

Edinburgh Medical Journal

31: 461-540 (Sept.) 1924

General Practice in Medicine. R. Thin.—p. 461.
*Effects of Antituberculosis Campaign on Diminution of Mortality from Tuberculosis. R. Philip.—p. 482.
Attitude of Medical Profession to Scientific Problems. T. A. Ross.—p. 527.

Effects of Antituberculosis Campaign.—The outcome of an extensive search, Philip says, has been a growing conviction that, where a marked diminution of mortality is discoverable at any time, there can be traced evidence of a contributing cause with which the effect may fairly be correlated. And where serious attempts at adequate antituberculosis organization have been undertaken—even with more limited potential and for a shorter period—promising indications of result have generally been forthcoming. On the other hand, where mortality rates continue relatively high, Philip says, one is safe to predicate the absence of effectively concerted effort against tuberculosis and, conversely, in countries where little attention has been given to measures of treatment and prevention, one may expect to find high death rates.

Indian Medical Gazette, Calcutta

59: 377-428 (Aug.) 1924

*Experimental Studies in Bilharzia Therapy. N. H. Fairley.—p. 377.
*Treatment of Cholera by Cresol. F. J. Palmer.—p. 381.
*Spider-Lick, a Dermatozoosis. C. Strickland.—p. 385.
Globulin Content of Serum in Kala-Azar. C. B. Ray.—p. 387.
Urea Stibamine in Treatment of Kala-Azar. P. Foster.—p. 391.
*Detecting and Estimating Indican in Urine by Cottonwool Plug Test. S. N. Gore.—p. 393.
Fifteen Cases of Exanthematic Typhus in Calcutta. U. P. Basu.—p. 396.
Beriberi and Rice Control in Malaya. C. E. Cobb.—p. 401.

Treatment of Bilharziasis.—Tartar emetic definitely failed to cure eleven out of nineteen animals experimentally infected with *Schistosoma spindalis* by Fairley. In three animals the parasitic level was reduced and in five complete or practically complete cure was established. From the therapeutic point of view the results were disappointing. Urea stibamine failed to cure in all of six cases investigated. Emetin hydrochlorid given by the intravenous route constituted an absolutely specific cure in all of five experimentally infected animals. This drug exerted a lethal action on the adult schistosomes in the portal system, which on dying were filtered out in the portal vessels of the liver inducing a secondary thrombosis—the second stage in their final disintegration by phagocytosis. Ova persisted in the tissues for several months after the drug treatment, but diminished progressively in quantity. Living ova rapidly disappeared. Pathologic lesions in the liver and elsewhere disappear with the death of the schistosomes, organized thrombosed vessels or periportal fibrosis constituting the only relics of previous schistosome infestation.

Cresol in Cholera.—Palmer reports good results from the use of cresol in the treatment of cholera. Immediately when seen the patient is given from 1 to 4 minims of cresol, according to the age and size, dissolved in a similar number of ounces of tepid water. This dose is repeated every quarter of an hour for a couple of hours, and then the interval between the doses is increased to half an hour, and later to an hour, two hours, etc., while at the same time the dose of cresol is slightly reduced. As the symptoms subside small quantities of tepid water at frequent intervals are given in the increasing intervals between cresol administration.

Spider-Lick.—"Spider-lick," one of the minor horrors of India, is a common, troublesome affection of the skin occurring at different periods of the year. Strickland says it is caused by *Poederus fuscipes,* one of the *Staphylinid* beetles.

Test for Indican in Urine.—Gore asserts that the cotton-wool plug technic devised by him primarily for applying Ehrlich's reaction to detect indol in sputum, can also be used to determine indican in urine; and compared with Obermeyer's test it has been found to be more simple, rapid and economical, in the reagents required, besides being independent of the drugs taken by the patient. Further, since the volatile chromogen in the urine responding positively to the cotton-wool plug test resembles indol in its reaction and is proportional to the indican as determined by Obermeyer's test, a quantitative method based on dilution tests has been devised whereby the amount of indican present in urine can be approximately estimated and expressed in terms of its indol-equivalent.

Irish Journal of Medical Science, Dublin

5: 339-394 (Aug.) 1924

*Rotunda Lying-In Hospital Report for 1922-1923. G. FitzGibbon, J. S. Quin and G. W. Theobald.—p. 339.

Rotunda Lying-In Hospital Report.—Of 1,877 patients admitted to the maternity wards of the Rotunda Lying-In Hospital, 1,624 were confined in the wards of the hospital. In the extern maternity, 2,098 women were visited in their own homes, of whom 1,824, were attended in their confinements. Of these latter there were 181 cases of abortion or miscarriage; four cases of placenta previa, with one death; twelve cases of antepartum hemorrhage with one death. Prolapse of the cord occurred in ten cases, seven with vertex presentations, one with a brow, and two with a breech. There were twenty-four cases of excessive hemorrhage during the third stage, and one woman died. In one case an hydatid mole was expelled spontaneously. Perforation was performed once for an hydrocephalic head. Forceps were used for delivery thirty-six times. Of the intern deliveries, thirty-eight were abortions or miscarriages before the twenty-eighth week. There were seventeen deaths in the hospital; five women were admitted profoundly septic, and one woman died of sepsis, having been admitted only just before delivery. One death occurred eight days after discharge from acute septicemia. Three women died of eclampsia, and two from cardiac failure. One woman died of rupture of the uterus, and one from concealed hemorrhage. Two primiparas with placenta praevia were lost, and one was admitted in a moribund condition. There were fourteen cases of prolapse of the cord, resulting in the birth of seven live infants. Forceps were applied in the delivery of 133 cases, twenty-three multiparas and 110 primiparas. Version was performed twenty-eight times, the indication being placenta praevia in fifteen cases. It was done twice for transverse lie of the fetus, shortly after the membranes ruptured, and in one case of neglected shoulder presentation. In four cases of twins the fetus lay transverse or obliquely, and version was done. In five multiparas, the head failed to enter the brim, or having entered, failed to come down. In six cases perforation of the head was done to facilitate delivery. Decapitation was done in one case after the head was delivered with forceps, as the shoulder could not be brought through. Five cases were complicated by an obstinate uterine inertia from the beginning of labor. There were two cases of dystocia due to formation of a contraction ring. Induction of labor was performed in eight cases in which death of the fetus was the indication; in three cases of severe albuminuria, which did not respond sufficiently to treatment, and in one case of eclampsia after recovery. In one other case induction was done on account of difficult labors in a tertiodecipara without any contraction of the pelvis, and ending in rupture of the uterus. There were nineteen cases of accidental hemorrhage, eighteen cases of placenta praevia, with six deaths, and nine cases of postpartum hemorrhage. Cesarean section was done fifteen times for contracted pelvis; five were repeated operations. In four cases labor was terminated by pubiotomy. The mortality for the maternity cases attended by the hospital was 0.6 per cent. There were three cases of insanity, two of acute mania, and one case of melancholia with mania. There were three cases of marked hydramnios; two cases of pregnancy with marked cardiac lesions, three cases of pregnancy following previous ovariotomies. Two patients were delivered who had previously had myomectomies performed. One woman was delivered by cesarean section on account of posterior development of the uterus following ventral suspension.

Japan Medical World, Tokyo

4: 219-249 (Sept. 15) 1924

Influence of Parenteral Inoculation of Pulmonary Cell Emulsion into Living Organisms. Y. Miyagawa, M. Terada, H. Murai and J. Kimura.—p. 219.
Nervous Paralysis of Polished Rice Disease. G. Kato.—p. 233.

Journal of Laryngology and Otology, Edinburgh

39: 481-536 (Sept.) 1924

Displacement of Antronasal Wall in Treatment of Atrophic Rhinitis. W. S. Syme.—p. 481.
Direct Removal of Laryngeal Papillomata. R. McKinney.—p. 485.
Throat and Ear Defects in Elementary School Child. E. Lowry.—p. 488.
Adenoidectomy. F. P. Sturm.—p. 491.
Control of Immediate Bleeding in Tonsil-Adenoidectomy. J. K. Love.—p. 493.
How Do Labyrinth Fistula Symptoms Arise? S. H. Mygind.—p. 498.
Facial Paralysis Associated with Ear Disease. T. A. MacGibbon.—p. 502.

Journal of State Medicine, London

32: 401-450 (Sept.) 1924

Municipal Health Department; Relation to Industrial Welfare. G. C. Trotter.—p. 401.
Cancer. W. M. Crofton.—p. 407.
Mineral Elements in Nutrition of Children. J. B. Orr.—p. 421.

Lancet, London

2: 533-582 (Aug. 30) 1924

*Variations from Normal Types of Human Metabolism. C. J. Macalister.—p. 533.
*Cellular Content of Milk. P. C. Varrier-Jones.—p. 537.
*Autogenous Vaccines in Leprosy. N. Walker.—p. 542.
*Action of Quinidin in Heart Disease. J. Hay.—p. 543.
*Soluble "Protein" in Gastric Fractions from Cases of Carcinoma. C. S. Hicks.—p. 546.
Blood Transfusion in Egypt. R. V. Dolbey and A. W. Mooro.—p. 547.
*Incidence of Goiter in Egypt. R. V. Dolbey and M. Omar.—p. 549.
*Suprarenal and Pancreatic Grafting. F. C. Pybus Durh.—p. 550.
Eunuchoidism in Sisters. I. Yates.—p. 551.
*Unusual Cause of Death in Subacute Infective Endocarditis. M. Weinbren and T. H. Jamieson.—p. 552.
Mobile Ascending and Transverse Colon. T. A. B. Harris.—p. 552.

Variations in Metabolism.—Macalister suggests that dietetic variations of metabolism in man result from reversions, sometimes toward a carnivorous, sometimes toward a vegetarian type of ancestry, and if this be so, there was a common stock from which these types originated. In the carnivora there was a latent or undeveloped vegetarian metabolism, whereas in the vegetarian primate type there was a latent carnivorous one. This hypothesis explains the possibility of there being an adaptability to new dietetic conditions on the part of primitive man as he emerged from the vegetarian or primate stage. With the development of the carnivorous instincts the latent carnivorous metabolism would become more and more highly developed, and by degrees the organs and secretions, necessary for a mixed feeder would become evolved; changes would take place in the encrinoid secretions, and there would be retrogression of other parts whose utility had become lessened in the new circumstances. It is on this account that vestigial remains play such an important part in the problems of metabolism. The embryo and fetus in the course of development illustrate many of the types belonging to postnatal conditions of former orders before the birth of the perfected infant man. It needs very little stretch of imagination to consider how, by persistence postnatally of one or other of the characters of former ancestries, may be explained some of those permanent anatomical and physiological imperfections which account for idiosyncrasies of metabolism.

Cellular Content of Milk.—Varrier-Jones asserts that it is possible by means of a differential stain to distinguish very accurately the various kinds of cells found in cow's milk. Without this it is impossible to place any reliance on so-called cell counts, as an indication of a diseased condition of the

udder. The cellular content of milk is profoundly altered under pathologic conditions. The different cells which predominate under these varying conditions are described. The only method of distinguishing a pus cell from a normal leukocyte is by means of a differential stain and a differential count, when their presence may readily be detected.

Vaccine Therapy of Leprosy.—Walker reports a case of nodular leprosy in which good results were obtained from the use of an autogenous vaccine prepared from a leprous nodule removed from the patient's arm. The improvement in the appearance of the lesion and the patient's general condition was very considerable.

Action of Quinidin in Heart Disease.—There is some difference of opinion concerning the degree of improvement resulting from the administration of quinidin and from the various reports it is obvious that there is an increasing tendency to give quinidin only in carefully selected cases. There is, however, in Hays' opinion, remarkable unanimity as to its value in patients suffering from exophthalmic goiter and auricular fibrillation, for these patients are especially conscious of and distressed by the rapid and irregular ventricular action, and are correspondingly relieved and benefited by the return to the normal rhythm.

Soluble Protein in Gastric Fractions in Carcinoma.—Hicks is convinced that serum effusion is not the factor involved in the Wolff Junghaus test for protein in gastric fractions. The fractional application of the test gives results which help to distinguish a benign from a malignant achylia, and which merit closer attention in practice.

Incidence of Goiter in Egypt.—Dolbey and Omar analyzed 216 cases of goiter. Only four were of the exophthalmic type, whereas 198 were of the colloid and adenoma type. Goiter is not common in Egypt. It occurs but rarely among the Arabs and the natives. Many factors may explain the absence of disorder of secretion of the thyroid. These factors are: (1) The diet of the fellaheen, which is almost entirely vegetarian and of a high vitamin content. (2) The extreme rarity of nervous diseases, either functional or acquired, among the agricultural population of Egypt. (3) The complete absence of intestinal stasis or of any of the subjective nervous phenomena associated with this condition among the fellaheen. (4) The essential difference in the psychology of the Orient from that of England or America. (5) The absence of strain and stress over financial affairs. (6) The simple uncomplicated lives led by the country people. (7) The high infant mortality, from 40 to 50 per cent., in the first year of life. Cretins, in all probability, would not survive. (8) The endocrine balance of the Egyptians. (9) All disorders of internal secretion, with the exeption of true diabetes, are rare.

Suprarenal and Pancreatic Grafting.—Pybus reports two cases of Addison's disease in which suprarenal grafting was done, one patient benefited considerably—the other did not. Two other cases are reported in which attempts were made to relieve diabetes by pancreatic grafting. In one of these cases temporary diminution of the sugar excretion was noted, but in both cases the graft failed to relieve the diabetes. One case terminated fatally three months afterward, the other after three years.

Splenic Hemorrhage Causes Death in Endocarditis.—The cause of death in the case cited by Weinbren and Jamieson was evidently a blood vessel giving way in the necrotic portion of the spleen, which was probably a soft infarct. The capsule of the spleen tearing with the increased pressure allowed the patient to bleed to death.

Medical Journal of Australia, Sydney

2: 159-184 (Aug. 16) 1924

Seven Years of National Health Insurance in England. A. Cox.—p. 161. To be Cont'd.

2: 185-212 (Aug. 23) 1924

Peribronchial Fibrosis. J. G. Hislop.—p. 185.
Seven Years of National Health Insurance in England. A. Cox.—p. 188.
Removal of Both Ovaries and Persistence of Menstruation. A. N. McArthur.—p. 193.
Suprapituitary Tumor with Fröhlich's Syndrome. H. H. Nowland, J. I. Hunter and O. Latham.—p. 194.

South African Medical Record, Cape Town

22: 343-366 (Aug. 9) 1924

Dental Disease: Bearing on Systemic Disorders. M. Braun.—p. 344.
Dental Sepsis. C. M. Cunningham.—p. 347.
Dental Sepsis and General Medicine. H. O. Hofmeyr.—p. 349.
Dental Disease: Bearing on Ophthalmology. A. W. S. Sichel.—p. 352.
Bearing of Dental Disease on Rhino-Otolaryngology. P. A. Smuts.—p. 354.
Relation of Medical and Dental Professions. W. Floyd.—p. 356.
Avoidable Wastage of Child Life in South Africa. J. A. Mitchell.—p. 358.

Tohoku Journal of Experimental Medicine, Sendai, Japan

5: 111-262 (Aug.) 1924

*Antagonism Between Potassium and Calcium Ions Observed from Their Effect on Gas Metabolism of Blood. K. Yanagi.—p. 111.
*Influence of Blood Gases (Oxygen and Carbon Dioxid) on Rapidity of Sedimentation of Erythrocytes. W. Ito.—p. 139.
*Influence of Chloroform Anesthesia on Epinephrin Secretion of Suprarenals. S. Kodama.—p. 149.
*Influence of Intravenous Injection of Chloral Hydrate on Epinephrin Secretion. S. Kodama.—p. 157.
Serum Protease. VII. Proteolytic Defense Proteins. K. Okubo and I. Kato.—p. 165.
*Action of Parasympathetic and Sympathetic Poisons on Blood Vessels of Kidney. Nature of Renal Vasomotor Nerves. F. Nakazawa.—p. 185.
*Influence of Thyroid on Course of Uremia. M. Naito.—p. 221.
Influence of Thyroid on Resistance of Kidney Against Injury. Altered Function After Injury by Threshhold Stimulation. M. Naito.—p. 247.

Ion Antagonism in Blood Gas Metabolism.—The antagonism between the potassium and the calcium ions, the main problem of Yanagi's investigation, observed from their effect on the reduction rate of blood, he says, cannot be explained wholly by the alteration in the hydrogen ion concentration of blood caused by their presence. It is to be ascribed to some unknown characteristic of each ion.

Effect of Blood Gases on Erythrocytes.—Ito found that oxygen retards sedimentation of the erythrocytes and carbon dioxid hastens it. The degree of this reaction is proportionate to the quantity of either gas present.

Effect of Chloroform and Chloral Hydrate on Epinephrin Secretion.—Kodama asserts that chloroform narcosis and chloral hydrate retard the secretion of epinephrin by the suprarenals.

Action of Drugs on Kidney Blood Vessels.—Pilocarpin causes exclusively peripheral vasodilation of the renal blood vessels, which, according to much evidence given by Nakazawa, is due to the stimulation of the vasodilator nerve endings. But judging from the experimental findings that it can not be antagonized by atropin and that the effectiveness remains constantly strong after the degeneration of the vagus endings and that faradic stimulation of the vagus trunk produces no effect on the renal circulation, this vasodilator effect of pilocarpin cannot be accounted for by the stimulation of the vagus endings, as is believed by a number of investigators. Evidence is given that this effect is based on the stimulation of the vasodilator nerve endings belonging to the anterior roots of the lower dorsal and upper lumbar segments. Atropin has neither central nor peripheral effect on the renal circulation, while it acts contrary to epinephrin and produces sometimes vasodilation by paralyzing the vasoconstrictor end apparatus, especially when its tone is increased by epinephrin. Epinephrin causes purely peripheral vasoconstriction, but has no effect on the vasomotor center. The point of attack is surely the end apparatus of the vasoconstrictor nerve, which passes through the splanchnic nerve. Apocodein also has no effect on the center, but causes peripheral vasodilation, which is contrary to epinephrin. According to this study, it is undoubtedly true that the vasoconstrictor nerve of the kidney follows the splanchnic nerve and its vasodilator nerve must also be included in the same nerve. The vagus has no effect, at least, on the renal circulation.

Influence of Thyroid on Kidney Function.—Naito asserts that in the presence of insufficient kidney function, increased thyroid function hastens death from uremia, and vice versa. This is due to the direct effect of the thyroid secretion in altering the chemistry of the blood. The direct causative factor leading to the occurrence of uremia is the retention in the blood of the nonprotein nitrogen, aided materially by the nonurinary nitrogens.

Archives Médicales Belges, Brussels

77: 453-555 (June) 1924

*Exophthalmic Goiter and Roentgenotherapy. Danzin.—p. 453.
*Bismuth in the Treatment of Syphilis. Rorive.—p. 463.
Insulin. A. Dans.—p. 468.

Exophthalmic Goiter and Roentgen-Ray Treatment.—Danzin asserts that the consensus of opinion is that roentgenotherapy is efficacious in the larger number of cases of frank exophthalmic goiter, but there are no means of foreseeing which will prove refractory. The roentgen rays do not relieve from the necessity of other therapeutic measures. More especially after the first exposures, means to aid in neutralizing the excess of thyroid products set at liberty by the break-down of cells seem to be called for. Pituitary extract may aid in checking thyroid secretion, and ovarian extracts are also often beneficial. The case should be investigated for acute articular rheumatism, syphilis and chronic intestinal stasis.

Bismuth in Treatment of Syphilis.—Rorive reports his experiences with bismuth intramuscularly in the treatment of eleven cases of syphilis. Twice he was obliged to interrupt the treatment, owing to marked gingivitis or digestive disturbances, accompanied by pronounced nausea. When the arsenicals failed, bismuth also failed.

Bulletin de l'Académie Royale de Médecine, Brussels

4: 409-451 (June 28) 1924

*Bathmotropic Action of Pneumogastric. H. Fredericq.—p. 442.

4: 453-489 (July 26) 1924

Medical Library of Prof. V. F. Plempius, Seventeenth Century. Committee Report.—p. 475.
Necessity for a Council on Pharmacy and Chemistry in Belgium. Henrijean.—p. 478. Summarized in News, p. 1255.
Depressing Action of Distention on Chronaxia. H. Fredericq.—p. 481.

Bathmotropic Action of the Cardiac Pneumogastric.—Fredericq has succeeded in measuring the bathmotropic action of the pneumogastric innervation of the heart in dogs by determining the chronaxia of the ventricle muscle. It drops from the normal 1.5 or 2 to 1 or 0.5 thousandths of a second when the pneumogastric is blocked by faradization. Mechanical distention of muscular fibers notably accelerates their excitability and thus reduces their chronaxia. The work was done on turtles, frogs and toads, studying the heart as well as other muscles.

Bulletin Médical, Paris

38: 1009-1036 (Sept. 13) 1924

*Treatment of Lichen Planus. J. Gouin (Brest).—p. 1015.

Successful Treatment of Lichen Planus.—Gouin applied the roentgen rays to an itching patch of lichen planus, and in twenty-four hours the pruritus had disappeared. In three weeks the last trace of the papules had vanished. When the next case of lichen planus was encountered, he applied the same treatment, in the same way, to the patch that had appeared first. It happened to be on the sternum, while in the first case the patch had been in the interscapular region. Not the slightest effect was apparent in the second case; then he transferred the exposure to the interscapular region, although there were no papules there. At once the patches of lichen began to subside, and the pruritus disappeared in two days. The explanation could be only that the exposure in the interscapular region had modified the sympathetic nerve below, and that this had broken up the vicious circle maintaining the lichen planus. Treatment on this basis has proved successful in ten cases. The subjective improvement is evident in a day or two, after a period of exacerbation like a Herxheimer reaction; then the papules on the trunk, arms, thighs and legs fade out in turn. Lichen in the mouth was not influenced. In one case he supplemented the interscapular with a lumbar exposure; these are the points where the sympathetic system seems most accessible to radiant influence. He found the measure occasionally successful also in a few other dermatoses when endocrine factors were not involved. The effect was striking in a recurring, itching, papular eruption in a physician.

Journal de Radiologie et d'Electrologie, Paris

8: 337-384 (Aug.) 1924

*Finsen Light Treatment in Tuberculosis. A. Reyn.—p. 337.
Quantimetric Units in Roentgenotherapy. I. Solomon.—p. 351.
*Scaphoiditis in Foot in Children. P. Lecène and A. Mouchet.—p. 357.
Fracture of Head of Radius. A. Laquerrière and J. Loubier.—p. 361.
Method of Protection in Radiotherapy. J. Belot.—p. 363.

Artificial Light Treatment of Lupus and Other Forms of Tuberculosis.—Reyn, superintendent of the Finsen Light Institute at Copenhagen, reports excellent results from a combined local and general phototherapy with the carbon arc lamp, with continuous current of 50 or 52 volts. A permanent recovery with slightly visible scars was manifest in 90 per cent. of 104 cases of lupus, while an intensive, but only local treatment, proved far less effectual. The method succeeded also in 439 cases of surgical tuberculosis, in 294 complicated with sinuses or an abscess. The recovery in joint tuberculosis has persisted for several years, and was followed by restoration of functioning. Still more rapid results were obtained in bone tuberculosis. Light baths, associated with roentgenotherapy, were effectual in 95 per cent. of 500 patients with hyperplastic tuberculous glands, with or without sinuses. The duration of the first bath is from thirty to forty minutes, aiming to produce a marked erythema, and it is gradually prolonged to two and a half hours by the end of the second week, giving the baths every other day. With fever or pulmonary tuberculosis, the first treatment should not surpass five or ten minutes, and the progression has to be slow. The whole course of treatment requires from one month to two years or more. Over 70 per cent. of his patients were adults. He reiterates that the Finsen arc light can fully replace sunlight, and is much superior to the mercury lamp.

Scaphoiditis in Foot in Children.—Lecène and Mouchet examined microscopically the scaphoid bone removed from a boy, aged over 8, in whom the intensity of the physical signs, and the insignificant radiologic findings made the diagnosis uncertain. They say that microscopic examination has not been made before in the about fifty reports of Köhler's disease published to date. The disturbance proved to be an attenuated osteomyelitis.

Paris Médical

217-232 (Sept. 20) 1924

Pathology of the Blood in 1924. M. Leconte and J. Yacoel.—p. 217.
*Raynaud's Syndrome in Infants. R. Dupérié.—p. 222.
*Sodium Citrate in Hemostasis. M. Renaud.—p. 224.
*Blood Changes in Deep Radiotherapy. Mouquin.—p. 227.
*Arterial Hypertension in the Young. M. Magniel.—p. 229.
*Hemorrhagic Purpura After Trauma. P. Chevallier.—p. 231.

Raynaud's Syndrome in Infants.—Dupérié reports five cases, mostly in girls, in one instance in two sisters. He describes a chronic form and benign, acute, grave and attenuated forms. He accepts that an infection or intoxication, as well as a syphilitic endarteritis may produce the syndrome. Also, hyperexcitability of the sympathetic nerve, connected with a disturbance of the endocrine glands, has to be considered. Electrotherapy is useful in treatment of the local gangrene, and specific treatment of syphilis is followed by rapid improvement when syphilis is a factor, as in one of his cases. One of the children lost part of a forefinger, and in another the nose formed a dry gangrenous patch. One child died from spasm of the glottis.

Sodium Citrate in Hemostasis.—Renaud refers to Hofmeister and Neubauer's success with intramuscular injections of concentrated solutions of sodium citrate before operations, to prevent excessive hemorrhage. Encouraged by their satisfactory results, he tried the injections in hemorrhages from cancer, but intravenously. The results, he says, were surprising, as in many instances continuous bleeding ceased after the first injection, and did not reappear in four or five months. No hemorrhage from carcinoma has occurred in the hospital since this treatment has been in routine use. An excellent effect was also manifest in hemoptysis, menorrhagia, and hemorrhage from hemorrhoids and other causes. The treatment may be suggested in hemorrhages during parturition, and in metrorrhagia from fibroma. The shock, which in some cases follows the injections, is transient, and never grave. He injects from 15 to 30 c.c. of a fresh solution of 30 gm. of sodium citrate in 100 c.c. of water.

Blood Changes in Deep Radiotherapy.—Mouquin noticed that deep radiotherapy caused an anemia for several days, a leukopenia, which may appear after the first and slight irradiation, and may persist for several months, and a relative neutrophil polymorphonucleosis and lymphopenia. As long as pronounced anemia or leukopenia persists, further exposure should be avoided. The changes in the blood are of value in prognosis, but are never of such gravity as to be a definite contraindication.

Arterial Hypertension in the Young.—Magniel reports three cases of arterial hypertension in young women, aged 18 and 27, and cites cases published by Heitz and Vaquez, in which the disturbance appeared at the age of 12 and 16. He mentions instances of hypertension in children reported by Hill, Berkley, Lee, and recently by Schwarz. He points out that the tendency to hypertension is frequently hereditary and familial.

Hemorrhagic Purpura After Trauma.—Chevallier describes a case in which crushing of a finger, with a local small subungual hematoma, was followed by epistaxis in an hour, and by hemorrhage from the anus after twenty hours. The girl, aged over 3, had never been subject to hemorrhage before, and has had none since this acute purpura.

Presse Médicale, Paris

32: 753-760 (Sept. 17) 1924

*Bilateral Partial Pneumothorax. Bezançon and Jacquelin.—p. 753.
*Fenestra Rotunda in Hearing. A. Bonain.—p. 755.
*Contagion in Congenital Familial Myotonia. P. Rebierre.—p. 757.
Treatment of Fracture of the Radius. Desfosses and Colleu.—p. 759.

Bilateral Partial Pneumothorax.—Bezançon and Jacquelin advocate in certain cases a simultaneous bilateral partial pneumothorax in acute bronchopulmonary tuberculosis in young subjects. They describe the method which they have employed in three instances. One patient, aged 18, has markedly improved during the year since the treatment. Early development of extensive tuberculous lesions in the healthy lung is an indication for such bilateral pneumothorax treatment.

Fenestra Rotunda in Hearing.—Bonain believes that the transmission of sounds occurs through the fenestra rotunda, as the basilar membrane, which supports the organ of Corti, is directly accessible by this way. The membrane of the fenestra, situated between the ossicles of the tympanum and the perilymph, secures a better accommodation for sounds of different intensity. Consequently it takes part also in protection of the internal ear. Lesions involving the fenestra rotunda tend to impair the hearing more than lesions elsewhere.

Contagion in Congenital Familial Myotonia.—Rebierre reports an atypical case of congenital familial myotonia manifested, among other tonic spasms, in the rigid persistence of the knee-jerk and abdominal reflexes. The disturbances started at the age of 7, and were also noted in several members of the family, all occurring at about the same age. There was a history of meningitis, or other infectious disease in early childhood. Rebierre is inclined to consider the condition as a sequel of infectious encephalitis, in which the familial character is due to the contagion.

32: 761-768 (Sept. 20) 1924

*Cancer Families. M. Letulle.—p. 761.
*Pulmonary Complications of Stomach Surgery. Delore et al.—p. 762.
*The Glycemia Curve in Syphilis. E. Schulmann.—p. 763.
*Calcium in Treatment of Tuberculosis. L. Cheinisse.—p. 766.

Cancer Families.—Letulle, referring to a physician's family in which carcinoma occurred in three generations, states that the localization of the tumor was in all in the same organ. Jayle observed the same phenomenon in twenty families out of thirty-six. Research on this so-called *hérédité similaire* may help to determine the nature of malignant disease.

Pulmonary Complications of Stomach Surgery.—Delore, Michon and Pollosson ascertained that the complications do not depend on the method of anesthesia, but are due to injuries during the intervention. They assume that the disturbance may be caused by septic emboli from the infected mucous membrane of the stomach, or by an inhibitory reflex due to the connection between the gastric and pulmonary branches of the vagus. Lavage with saline solution, before and after the operation, is suggested in prophylaxis.

The Glycemia Curve in Syphilis.—Schulmann's study of ninety syphilitics proved the presence of hyperglycemia in the secondary period, and in cases with a lesion of the liver. An increased sympathetic tonus may explain the phenomenon in the secondary phase of syphilis, while defective functioning of the liver, for which the spirochetes are responsible, produces the glycemia by a more complicated mechanism.

Calcium in Treatment of Tuberculosis.—Cheinisse cites Rosen (Moscow), who used intravenous injections of calcium chlorid in 200 cases of active tuberculosis, not to cure any special morbid manifestations but as a systematic treatment of the disease. The course of treatment is divided into two series of fifteen injections each, with a ten day interval; the injections are given usually every second day. The average dose for one injection is 300 c.c. of a 1.5 per cent. solution. An increase in weight occurred in the second week, associated with improvement in the heart action. Fever, sweats and cough disappeared, and the specific bacilli disappeared by the end of the third month. The auscultation and percussion signs persisted longer. Calcium in food and by the mouth is given during the whole treatment. Recurrences were noted only in thirty patients in the first three years after apparent recovery.

Revue Franç. de Gynécologie et d'Obstét., Paris

19: 401-432 (July 10) 1924

*Improved Technic for Subtotal Hysterectomy. L. Laurentie.—p. 401.
*Bilateral Wolffian Cancer. J. Madon and A. Guibal.—p. 405.

Improved Technic for Incomplete Hysterectomy.—Laurentie admits that a partial hysterectomy is often advisable in inflammations of the adnexa, and with a fibroma of the uterus. He suggests to complete the subtotal operation by a large subcortical excision of the cervix, leaving only a thin fibrovascular layer. The vagina is thus left intact, while still the hysterectomy is essentially total.

Wolffian Carcinoma in Both Ovaries.—Madon and Guibal report a case in which the necropsy and the microscopic findings proved an atypical carcinoma in both ovaries, originating from wolffian bodies, the ovary forming finally the capsule of the tumor.

19: 433-456 (July 25) 1924

*Radical Treatment in Bartholinitis. C. Thélin.—p. 444.

Radical Treatment in Bartholinitis.—Thélin specifies that incision alone is not effectual, and that total removal of Bartholin's gland is necessary in recurring inflammations. Recovery was complete in his two cases in a week or two after this radical operation.

19: 457-496 (Aug. 10) 1924

*Obstetric Shock. M. Rivière.—p. 457.

Etiology of Obstetric Shock.—Rivière, analyzing forty-nine cited observations of so-called obstetric shock, declares that labor is a predisposing condition, but is not alone responsible for it. Necropsy invariably disclosed organic lesions preceding the parturition. In some cases the toxins in labor aggravated a disturbance of the liver. In others the cardiovascular system was involved, owing to a failing myocardium, to pleuropulmonary disease, or to a disturbed sympathetic system.

Schweizerische medizinische Wochenschrift, Basel

54: 857-880 (Sept. 18) 1924

*Experimental Roentgen-Ray Cancer. Bloch.—p. 857.
*Vital Staining of Bladder Mucosa. G. Huber-Pestalozzi.—p. 865.
Polyposis of Ileum with Invagination. R. Schwyzer.—p. 869.
Needle Holder. P. Deus.—p. 870.
Liver Function Tests. O. Schirmer.—p. 871. Conc'n.

Experimental Roentgen-Ray Cancer.—Bloch induced cancer by roentgen irradiation of the ears of two rabbits. Neither the single dose, nor the single time of exposure seemed to have much influence. The total necessary dosage was between 1,200 and 2,000 X units. The cancers developed after twenty-two and thirty-two months. They formed many metastases, but only autotransplantation proved successful. He believes that only those agents produce cancer which injure the

regulatory mechanism of the nucleus which normally may have an inhibiting action on cell division.

Vital Staining of Bladder Mucosa.—Huber-Pestalozzi examined patients with the cystoscope after injections of a 5 per cent. solution of methylene blue into the bladder. The trigonum region was stained in the majority of the subjects—chiefly women—thus examined. He believes that this is not a vital staining; it is probable that only desquamating cells, with lost or almost lost vitality, take up the dye.

Clinica Medica Italiana, Milan

55: 1-98 (Aug.) 1924

*Tests for Sugar Content of Blood. L. Preti.—p. 1.
*Malignant, Slow Endocarditis. V. Ronchetti.—p. 6.
*Shock Treatment with Hypertonic Sugar Solution. A. Ceresoli.—p. 18.
Receptivity of the Skin for Infections. G. Aiello.—p. 31.
Gastric Chemistry in Malaria. G. Somaini.—p. 43.
Present Status of Knowledge as to Hematemesis. L. Capponago.—p. 64.
*Experimental Production of Gallstones. M. Agrifoglio.—p. 89.

The "Clinica Medica Italiana."—After an intermission of eight years, the *Clinica Medica* has resumed publication with Dr. Carlo Vallardi as editor. It is to be published monthly.

Microtests for Glucose in the Blood.—Preti gives the details of the Schaffer and Hartmann technic, regarding it as more practical and rapid than others.

Malignant Slow Endocarditis.—Ronchetti has encountered eight cases since early in 1921. The streptococci cultivated from the blood do not always give the viridans reaction on blood agar. There was no history of acute articular rheumatism in four of his eight cases. No benefit was derived from the long array of measures applied in treatment, from protein shock to acriflavin by the vein.

Shock Treatment with Hypertonic Glucose Solution.—Ceresoli affirms that intravenous injection of a 25 or 30 per cent. solution of glucose has several advantages over all other forms of parenteral shock treatment, and often succeeds after failure of other forms and other measures. He has applied it in typhoid, puerperal septicemia, cystopyelitis, and other diseases, and generally found it effectual, especially in streptococcus puerperal fever, and septicemia of gynecologic origin, in cystopyelitis with or without nephritis, and also in posttyphoid angiocholitis. Diuresis is notably increased, and the sugar has a nourishing action on the heart. In malignant slow endocarditis and acute pneumonia, shock treatment, even with glucose, seems to be contraindicated, judging from his experience.

Experimental Cholelithiasis.—Agrifoglio ligated loosely the common bile duct in dogs, and then injected typhoid or colon bacilli by the vein or into the gallbladder, or he fed the dogs for months with excessive amounts of fats. Gallstones developed only in the group in which cultures of typhoid bacilli, attenuated in virulence, had been injected directly into the gallbladder. The concretions that developed in this group resembled those found in man.

Policlinico, Rome

31: 401-448 (Aug. 15) 1924. Surgical Section

*Functional Tests of the Kidneys. C. Bonetti.—p. 401.
Hernia of Stomach Through Diaphragm. Businco and Manca.—p. 404.
Effects of Explosive Bullets. A. Cordero.—p. 421.
*Postoperative Jejunal Ulcer. S. Gussio.—p. 427. Conc'n, p. 476.

Functional Kidney Tests from Surgical Standpoint.—Bonetti compared the findings with the Ambard formula (applied 950 times to 610 patients, followed by operation in 491), with the findings of the phenolsulphonephthalein test (applied in fifty cases), and the findings at operation. His research corroborates the almost perfect oversight of conditions in the kidneys when both tests are applied in addition to microscopic examination of the urine and catheterization of the ureter. The two functional tests do not compete with but supplement each other.

Secondary Peptic Jejunal Ulcers.—Gussio declares that his own experience with five cases and his extensive review of the literature have confirmed that postoperative peptic ulcer is traceable to the acidity of the stomach in relation to the biologic alkaline defensive processes. In prevention, therefore, all operative measures on the stomach must be avoided that do not produce conditions like those with a von Hacker gastro-enterostomy and high resection of the pyloric region and part of the stomach.

31: 449-496 (Sept. 15) 1924. Surgical Section

Diverticula in the Esophagus. A. Caucci.—p. 449.
*Postoperative Parotitis. G. Fantozzi.—p. 462.

Postoperative Parotitis.—In the four cases reported by Fantozzi the operation had been on the abdomen in the three women and one man, and had not involved genital organs. In looking over Italian literature he found no mention of postoperative parotitis in any case after operations on the ovaries. He has compiled 300 cases of secondary parotitis, and is inclined to regard it as a local process from ascending infection. This is favored by administration of atropin before the operation and by compression of the jaw during the general anesthesia proceedings. This complication is peculiarly grave after operations for gastric cancer. In prevention, hygiene of the mouth and efforts to maintain normal secretion of saliva are important. One way by which this can be realized is by holding acid mineral waters or carbonated water in the mouth; this is easier than getting the patient to chew to promote salivation. He advises incision at once, without waiting for fluctuation, a single large cosmetic incision at the best point for gravity drainage.

Riforma Medica, Naples

40: 841-864 (Sept. 8) 1924

*The Pirquet Test in Inert and Active Tuberculosis. R. Feletti.—p. 841.
*Technic of Wassermann Test. E. Lombardi.—p. 841.
*Epinephrinuria in Pregnancy. S. Tremiterra.—p. 844.
*Plastic Linitis. V. Pauchet.—p. 846.
Prevention of Goiter in Valtellina. G. Muggia.—p. 848.
Removal of Plaster Casts. F. Viola.—p. 848.

The Pirquet Test in Active and Inactive Tuberculosis.—Feletti applied the Pirquet test in adults, using various dilutions of tuberculin. None of the twenty healthy subjects gave a reaction with a 10 per cent. solution, and only 8 per cent. of the fifty-nine patients with diseases other than tuberculosis. On the other hand, every one of the fifty tuberculous patients, except three in the anergic stage, gave a positive although sometimes weak reaction.

Technic of Wassermann Test.—Lombardi reports further results with Pane's technic. He obtained positive results with each syphilitic serum when he left the serum for eight days at room temperature in a diffuse light. This is far preferable to inactivation by heat, which caused a negative reaction in three of his nine cases. The reaction is rarely positive in healthy subjects.

Epinephrinuria in Pregnancy.—Tremiterra used several tests for epinephrin in the urine of pregnant women. The results were negative.

Plastic Linitis.—Pauchet believes that plastic linitis (diffuse cancer) of the stomach develops usually on the basis of ulcers, especially those of syphilitic origin.

40: 865-888 (Sept. 15) 1924

Combating Tuberculosis in Italy. A. Ferrannini.—p. 865.
Local Lymphogranulomatosis. E. Musante.—p. 868.
*Leukocyte Counts During Digestion. C. Cipriani.—p. 872.

Leukocyte Counts While Stomach Tube is in Place.—Cipriani made serial blood counts controlling the gastric secretion with a retention tube. He found a relation between hypersecretion and leukocytosis. Leukopenia seems to depend not only on lower acidity but also on individual factors. He confirms Racchiusa's observation on the frequency of leukocytosis in hyperchlorhydria and leukopenia in achylia, even in fasting subjects.

Brazil-Medico, Rio de Janeiro

2: 133-142 (Aug. 30) 1924

*The Oculocardiac Reflex in Surgery. Americo Valerio.—p. 133.
Outcome in Case of Stab Wound of Abdomen. A. Paulino.—p. 135.
Necropsy Findings in Case of Chronic Nephritis. Pamplona et al.—p. 135.

The Oculocardiac Reflex in Surgery.—Valerio regards the oculocardiac test as a valuable means for estimating the functional capacity of the heart and of the centers in the medulla

oblongata, preliminary to operations. Inversion of the reflex calls for caution, although the prognosis is favorable. With the reflex abolished, the prognosis is grave, almost invariably fatal. With a positive oculocardiac reflex, he advises to use ether instead of chloroform, and give a preceding injection of atropin. With an exaggerated reflex, he warns against general anesthesia; cautious intraspinal anesthesia can be used for abdominal operations.

2: 143-160 (Sept. 6) 1924

*Extra Large Gallstones. Cardoso Fonte.—p. 143.
Physiopathology of Diabetes. A. L. Pimenta Bueno.—p. 145.

Expulsion of Large Gallstones.—Cardoso Fonte states that the largest gallstones expelled spontaneously in his clinical experience measured 18 by 23 mm. and 18 by 20 mm.; five smaller gallstones were expelled at the same time by his patient, a woman, aged 42. He queries whether these large calculi could have been expelled by the stretched natural routes or whether there must have been an insidiously developing fistula somewhere that allowed their passage.

Lepra, Caracas

1: 19-32 (June) 1924

*Curability of Leprosy. A. Benchetrit.—p. 19.

Curability of Leprosy.—Benchetrit, chief of the leprosy service in Venezuela, is now engaged in preaching the curability of leprosy. In this second number of his periodical, founded mainly for this purpose, he reproduces a number of letters from the director of the Leper Hospital at Hawaii and others, all replying encouragingly to his direct question "Is leprosy curable?" although qualifying the meaning of "curable" in this sense. He is trying to dispel the public prejudice against lepers to prepare for paroling those now improving under treatment.

Revista de Medicina y Cirugía, Havana

29: 283-302, 1924

A Sarcoma of the Liver. N. Puente Duany.—p. 283.
*Uncontrollable Vomiting of Pregnancy. J. Ortiz Pérez and H. Candela León.—p. 287.

Incoercible Vomiting of Pregnancy.—From the first onset of the pregnancy the quadripara presented grave and uncontrollable vomiting until a spontaneous abortion at two months and a half. The fetus seemed to be complete, and there was no further tendency to vomit. Six and a half months later she was delivered of a viable child evidently at term. The authors comment that the whole history of the vomiting of pregnancy is anecdotic.

29: 355-378 (July 25) 1924

*Blindness from Congenital Cataracts. Horacio Ferrer.—p. 355.
Present Conception of Idiomuscular Contraction. Fiterre.—p. 367.

Bilateral Congenital Cataract Removed at Age of 29.—Ferrer says that the pupil reaction to light was good in both eyes but the corneas were small and there was incessant oscillatory nystagmus. Extraction of the cataracts proved successful from the standpoint of function in each eye and binocular vision is being acquired, while the nystagmus disappeared the sixth week after the first operation. Visiön is now 1/10 in each eye. Ferrer has found only two other cases on record in which blindness from congenital cataract was corrected after the age of 20. His patient lacked less than two months of the age of 30. He is intelligent although his blindness from birth and his poverty had prevented his education. His reactions when the world first became visible to him presented several peculiar features. Everything looked blue to him at first.

Semana Médica, Buenos Aires

2: 469-520 (Aug. 28) 1924

Inaugural Lecture in Neurology Course. M. Alurralde.—p. 469.
Eunuchoidism: Gerodermia Genitodystrophica. Izzo.—p. 475.
*Trismus of Dental Origin. R. Finochietto.—p. 482.
Benign Branchiogenous Epithelioma. Strada and Allende.—p. 485.
*Enlargement of Inguinal Glands. E. B. del Castillo and Pascual Santoro.—p. 488.
Simplified System of Focal Illumination. J. Lijó Pavía.—p. 491.
*Tongue Depressor-Pharyngoscope. C. Citrino.—p. 493.
*Neuralgia of Brachial Plexus. José Valls.—p. 497.

Trismus of Dental Origin.—Finochietto relates that injection of a little novocain with epinephrin into the masseter muscle overcame the spasmodic contracture secondary to a dental focus in three cases described. He gives four illustrations showing the best mode of access, with dental foci at different points.

Epidemic of Subacute Inguinal Glandular Disease.—Eight cases of enlargement of glands in the groin were encountered in the course of two months in young men and one boy, aged 5. The enlarged gland was punctured early in one case, and the gland soon subsided to normal size without suppuration. The others progressed to suppuration, and the process continued a tedious course until apparently arrested by subcutaneous injections of emetin. Glands elsewhere were not enlarged; no erosion or sore or chancroid could be discovered to explain the invasion, and bacteriologic examinations were negative. Two brothers developed the adenitis almost simultaneously. Nothing of the kind was observed in the prostitutes of the region, one of the authors being the official medical inspector of prostitutes.

Tongue Depressor-Pharyngoscope.—The handle contains the battery for the light, which is fastened in the hooded top, just above the tongue depressor.

Neuralgia of Brachial Plexus.—Valls was amazed at the complete and apparently permanent cure of the severe neuralgia which seemed to be the result of pressure on the brachial plexus by the hypertrophied transverse process of the seventh cervical vertebra. The cure was realized under tentative treatment for syphilis, although there was nothing to suggest sypnilis except the nocturnal exacerbation of the pains. On the assumption that such vertebral anomalies are sometimes traceable to inherited syphilis, a course of mercury was given, and the pains disappeared completely for two years. Then slight pains returned, but subsided anew under a second course, with neo-arsphenamin, and there has been no recurrence during the year and a half to date. The man is now 33 years old.

Siglo Médico, Madrid

74: 113-136 (Aug. 2) 1924

*Malta Fever. C. Schneider San Román.—p. 113. Conc'n, p. 165.
Prophylaxis of Venereal Disease. C. Juarros.—p. 117.
The Aims of a Pediatrics Congress. Duarte Salcedo.—p. 120.
*Phenomena in the Lungs in Hypertension. G. R. Gonzalo.—p. 122.

74: 161-180 (Aug. 16) 1924

Present Status of Adhesive Pericarditis. G. R. Gonzalo.—p. 161.
Ehrlich's Scientific Work. J. Mouriz.—p. 163. Cont'n.

Malta Fever.—Schneider San Román has encountered 174 cases of Malta fever in his district—where goat keeping prevails—in the last five years, and relates that drugs were of no use in treatment, but that vaccine therapy cured 84 per cent. and in less than twenty-five days in 86.5 per cent. He injected the vaccine as soon as the diagnosis was made, regardless of the fever at the time, and kept up the vaccine therapy for at least a month after disappearance of the fever and pains. There were four deaths in the 150 vaccinated, one child dying from meningitis notwithstanding the vaccination the third month of the disease. This child had the habit of sucking milk directly from the goat. He urges compulsory vaccination of all goats as the only practicable prophylaxis.

Phenomena in Lungs with Arterial Hypertension.—Among the other forms discussed, Gonzalo warns of the insidious edema in some portion of the lungs which is merely secondary to some unsuspected heart lesion. It is too often diagnosed as an atypical pneumonia; the absence of fever is not heeded. Behind the deceptive pulmonary manifestations is the grave heart disease. The diastolic hypertension is long the only sign of the grave cardiovascular disease.

Archiv für klinische Chirurgie, Berlin

130: 625-800 (Sept. 15) 1924

*Function of the Gallbladder. H. F. O. Haberland.—p. 625.
An Inguinal-Femoral Hernia. H. Hübener.—p. 647.
Surgical Intestinal Affections During the Great Famine in Russia 1921-1922. A. A. Kosyrew.—p. 653.
*Tetanus Bacilli in the Intestines. Buzello and Rahmel.—p. 660.
Statistics on Treatment of Appendicitis. Hörnicke.—p. 677.
Access to the Spleen. Ssoson-Jaroschewitsch.—p. 697.
*Ligation of Carotid Artery. F. Walcker.—p. 736.

*Improved Suture of Tendons. H. Ruef.—p. 757.
Internal Secretion of Salivary Glands. Goljanitzki.—p. 763.
Pepsin-Hydrochloric Acid in Minor Surgery. Eichelter.—p. 780.
Hereditary Brachyphalangia. Esau.—p. 786.
Retroperitoneal Phlegmon as Complication of Cholelithiasis. A. Jolondz.—p. 793.
Gersuny's Pedunculated Flaps for Reconstruction of the Face, etc. L. Moszkowicz.—p. 796.

Function of the Gallbladder.—Haberland presents the various arguments in favor of the different functions that have been ascribed to the gallbladder in recent years. The evidence is sifted and compared with the results of his own experimental research, especially in regard to the influence on the production and flow of bile from pilocarpin, atropin, epinephrin, morphin and the electric current. None of them induced contraction of the gallbladder or biliary ducts. The gallbladder did not contract under the influence of magnesium sulphate; meat and bile seemed to be the only substances that displayed a bile-expelling action. The bile flow keeps up about the same with the stomach empty. The gallbladder is passively emptied by the direct pressure and the increased intra-abdominal pressure during inspiration. During expiration, the bile is aspirated into the gallbladder. Bowel peristalsis promotes the production of bile by its milking movements, which also aid in forcing the bile out from the hepatic and common bile ducts. Persons with shallow respiration, flabby abdominal walls and sluggish bowel movements have a tendency to stasis of bile and its consequences, from purely mechanical causes. When patients complain of pains soon after cholecystectomy, this can be traced to stagnation of the bile in the hepatic and common bile ducts. Drawing a few deep breaths may arrest the pain immediately The exaggerated intra-abdominal pressure forces the contents of the ducts along. The deep breathing aids in warding off pneumonia, and it may also start certain reflex actions. When the intestines are distended and respiration hampered, the secretion of bile is hampered too. Prophylaxis and treatment of stasis of bile call for breathing exercises, abdominal respiration, elastic abdominal wall musculature, measures to combat constipation, and morphin and atropin during colic pains. The atropin dilates the Oddi sphincter, and enough bile may flow off to relieve the pressure causing the pains

Tetanus Bacilli in the Intestines.—Buzello and Rahmel found tetanus bacilli in the stools of 40 per cent. of fifty persons from farms near Greifswald, all free from any signs of tetanus at any time. In the majority of the positive cases, the patients had cancer or ulcer of the digestive tract. All but four of the total fifty were men; the ages ranged from 12 to 63. Tests with saliva and stomach content failed to show any inhibiting action on tetanus bacilli except with a naturally acid gastric juice. This checked the growth, the spores did not sprout, and no toxin was formed, but the spores were not killed. Bile and pancreatic juice promoted the growth of tetanus bacilli and enhanced production of the toxin. Healthy mice fed with pure cultures of tetanus bacilli were not affected by them, but when the tetanus cultures were mixed with other micro-organisms causing inflammation in the bowel, the animals all died in a few days without, however, exhibiting signs of tetanus

Ligation of Carotid Artery.—Walcker examined the collaterals in 100 cadavers with especial regard to those which function during the first hours after ligation of the common carotid. The variety of such collaterals and their varying course explain the difference in the symptoms observed after ligation of either the common or the internal carotid. The size and shape of the head influence the development of these collaterals, so that the practical conclusion is justified that the ligation is not so dangerous with mesocephaly and brachycephaly as with dolichocephaly. In the latter, the communicating arteries in circulus Willisi are often absent. There is greater danger of complications in adults than in the young, as the arteries wind more with advancing age. If the jugular vein is wide, this must be ligated with the artery, but if it is small the vein does not require ligation.

To Improve Outcome of Suture of Tendon in Hand.—Ruef passes a stout thread through the tendon far above the completed suture, and fastens the thread to a finger splint with elastic traction. This relieves the suture from all strain.

Deutsche medizinische Wochenschrift, Berlin

50: 1267-1314 (Sept. 19) 1924

The Body and Soul Question. Ziehen.—p. 1267. Idem. Köhler.—p. 1269.
*Consciousness Centers. M. Rosenfeld.—p. 1271.
*Heredity of Acquired Characters. V. Haecker.—p. 1272.
Constitution, Character and Psychosis. K. Birnbaum.—p. 1275.
*The Constitution and Humoral Pathology. B. Aschner.—p. 1277.
Physiology of Work. E. Atzler.—p. 1280. Cont'd.
*Pathology of the Thyroid. A. Oswald.—p. 1282.
Goiter Problems. O. Hildebrand.—p. 1285.
A New Trypanocidal Antimony Compound. Uhlenhuth et al.—p. 1288.
*Bacterial Populations. O. Bail.—p. 1289.
*Spread of Tubercle Bacilli. E. Löwenstein and M. Moritsch.—p. 1290.
*Spontaneous Atrophy of the Testis. H. Küttner.—p. 1291.
*Atypical Tardy Syphilids. E. Hoffmann.—p. 1294.
*Eggs in Children's Food. E. Moro.—p. 1296.
System and Biology of Corynebacteria. K. L. Pesch.—p. 1298.
*Innervation of Vessels of Extremities. Schilf.—p. 1299.
Progress in Research on Atoms. H. Küstner.—p. 1302.
Goiter in Switzerland and United States. Sieveking.—p. 1302.
Statistics on Medical Students. J. Schwalbe.—p. 1302.
My Twenty Years Prison Sentence at Nancy. Vulpius.—p. 1303.

Consciousness Centers.—Rosenfeld points to observations made on animals which do not become unconscious after removal of all the brain except for parts of the corpus striatum and thalamus. He observed a patient who became completely unconscious after a small hemorrhage into the fourth ventricle, with blocking of the aqueduct by a blood clot. Vestibular reflexes were absent, but the respiration and pulse were normal. He believes that the main center for consciousness is in the medulla oblongata, and less important centers are in the central nuclei.

Heredity of Acquired Characters.—Haecker deals with the problem and explanations of heredity of acquired characters. A hormone action on the germ plasma from a changed organ is possible.

The Constitution and Humoral Pathology.—Aschner attributes the overspecialization to Bichat's and Virchow's conception of organ and cell pathology, and advocates partial return to the older humoral pathology. He determines the individual constitution by considering the sex, age, complexion, dimensions, tonus of striated and plain muscles, the temperament, and the predominant organ system (lymphatic, etc.). There can be no greater constitutional difference between two individuals than a different sex. The constitution varies according to the age, the thin asthenic girl changing into a plethoric matron. General treatments, especially venesection, are neglected too much.

Pathology of the Thyroid.—Oswald had good results with thyroid treatment in cretins over 18 years of age. The best prognosis is in the type with enlargement of the thyroid. Thyroidectomy in the hyperplastic type gave good results in Hotz' experience. He emphasizes that the output of the hormone, not its presence in the thyroid, has an effect on the whole body. Exophthalmic goiter occurs only in subjects with a neuropathic predisposition. It was induced artificially in fox terriers, but only in those degenerated by inbreeding. The thyroid secretion lowers the threshold of response of the visceral nervous system. Thyroglobulin has this action, while thyroxin is less active.

Bacterial Populations.—Bail found that the number of living germs in a fluid medium is a fixed figure characteristic of the species, and is largely independent of the quality of the medium. Additions of nutritive substances produce only an increase of the bacterial substance, but the number of living germs remains the same. Whether this equilibrium is due to the multiplication occurring only at the same rate as the dying, or whether one of the two germs resulting from a division dies, is uncertain. The phenomenon is not due to using up of the food: If centrifugated germs are transferred to a new medium, the maximum of living germs (M) remains the same. It seems as if each cell requires a certain space to live in. In mixed cultures, the total number of living cells is no larger than the number of one of the species alone in a medium.

The Spread of Tubercle Bacilli.—Löwenstein and Moritsch found tubercle bacilli in the spleens of guinea-pigs as early as twenty-four hours after an intracutaneous infection.

Spontaneous Atrophy of the Testis.—Küttner reports two personally observed cases of spontaneous necrosis of a healthy testis, and discusses eighteen other cases from the literature. There were no indications that torsion could have been responsible for the condition.

Atypical Tardy Syphilids.—Hoffmann confirms the frequency of a syphilitic origin of essential progressive telangiectasias and of livedo racemosa.

Eggs in Children's Food.—Moro found that the idiosyncrasy of children to eggs was always due to the egg albumin, never to the yolk.

Innervation of Vessels of Extremities.—Schilf uses the word "periarterial histonectomy" instead of "sympathectomy," because he found that the sympathetic nerves to the vessels do not follow the adventitia.

Deutsche Zeitschrift für Chirurgie, Leipzig

187: 1-144 (Aug.) 1924

Mucocele of Vermiform Appendix. S. Simon.—p. 1.
Branchiogenous Cancer. G. Brandt.—p. 15.
Intestinal Hemorrhage After Operations on Kidneys, and Vice Versa. F. Walcker.—p. 22.
*Origin of Round Gastric Ulcer. Müller and Heimberger.—p. 33.
*Anatomy of Stomach with Ulcer. L. Duschl.—p. 55.
Muscle Fibers in Intraperitoneal Adhesions. Wereschinski.—p. 73.
Spontaneous Gangrene of Legs. F. Kazda.—p. 86.
Hemangioma of the Parotid Gland. E. Kittler.—p. 116.
Ascaridiasis and Acute Pancreatitis. W. Pfanner.—p. 125.
*Endocrine Origin of Thymic Asthma. C. Werneck.—p. 133.
Cystitis with Necrosis of Mucosa. W. Peters.—p. 138.
Incarceration of Diverticulum in Hernial Sac. K. H. Erb.—p. 142.

Origin of Ulcer.—Müller and Heimberger noted striking characteristic differences in the structure of 18 stomachs that had been resected on account of cancer, 4 of duodenal ulcer, and 28 resected on account of gastric ulcer. In the ulcer cases the capillaries invariably presented evidence of a tendency to a neurosis of the blood vessels. A constitutional predisposition to stasis in the finer blood vessels readily explains the development of an ulcer when some exogenous influence permits self-digestion. This vasoneurotic diathesis was always evident in other regions in these patients (lips, skin). Nothing of the kind could be discovered in 13 of the 18 cancer patients; in the other 5, the cancer had developed on the basis of an ulcer. Nothing of the kind could be discovered, either, in the stomach of persons free from ulcer and cancer.

Anatomy of Stomachs Predisposed to Ulcer.—Duschl confirmed on 146 resected stomachs the peculiar shapes and sizes of the capillaries in the gastric mucosa in ulcer cases. The capillaries twist and branch abnormally, thus displaying a local preparedness for disease. His findings thus confirm those of Müller and Heimberger from the same university (Tübingen).

Cure of Thymic Asthma.—The male infant, aged 3 months, had had stridor from birth, and was unable to nurse properly on account of disturbance in respiration. The clinical picture was that of thymic asthma, with spasms of cyanosis and intense dyspnea lasting for two hours and followed by a profuse flow of mucus. The thymus did not seem to be enlarged, and there was nothing to indicate disease of the bronchial or tracheal glands. The stridor accompanied both inspiration and expiration; the lower ribs were drawn in as inspiration began and then were protruded. Werneck proposed thymectomy but the family declined. The child was brought in asphyxiated a few days later, in deep cyanosis and apparently dead. Without any attempt at anesthesia, the right lobe of the thymus was removed. It weighed 5 gm. and was macroscopically normal, but the microscope revealed histologic changes. The total weight of the thymus can be estimated at 9 gm. which is within normal range, and there could not have been compression of the air passages or nerves. All the symptoms gradually disappeared, the stridor the second day. There has been no tendency to suffocation or cyanosis since the fourth day, and the child in two months had gained 1,200 gm. These facts can be explained only by assumption of excessive endocrine functioning of the thymus as responsible for the respiratory disturbances, cured by partial thymectomy.

Klinische Wochenschrift, Berlin

3: 1705-1744 (Sept. 16) 1924

*Fundamentals of Organotherapy. L. Asher.—p. 1705.
*Nutrition and Metabolism in Pregnancy. Haselhorst and Plaut.—p. 1708.
*Congo-Red Test. H. Bennhold.—p. 1711.
*Treatment of Essential Hypertension. E. Kylin.—p. 1712.
Technic of Suboccipital Puncture. R. Stahl.—p. 1714.
*Prevention of Puerperal Fever. Salomon and Bieringer.—p. 1716.
*Periods in Dementia Praecox. H. H. Kritzinger.—p. 1718.
Kahn's Cancer Test. H. E. Büttner.—p. 1720.
Anthrax Infection. R. Adelheim and A. Kaktin.—p. 1721.
*Cholesterol and Vitamin B. F. Verzár et al.—p. 1723.
*Bone Marrow and Vitamin C. F. Verzár and E. Kokas.—p. 1723.
Epinephrin in Hypertension. E. Deicke and W. Hülse.—p. 1724.
Thymus Death. K. Stallkamp.—p. 1724.
Asphyxia of the New-Born. Zangemeister.—p. 1725.
Tuberculosis in Old People. F. Goldmann and G. Wolff.—p. 1727.
Distribution of Injected Colloids. N. Anitschkow.—p. 1729.

The Fundamentals of Organotherapy.—Asher discusses the difficulties of a scientific foundation for organotherapy. The conceptions of hypofunction and hyperfunction are—even in the best studied instances (thyroid)—to a large degree artificial constructions. In other cases—excessive production of epinephrin or of pancreatic secretion—such assumptions are merely speculations so far. It is different, whether the action of a hormone increases in a simple proportion to the amount injected or in a curve which reduces the interval between the threshold and the maximum of action. The matter is further complicated by the possibility of a change into the opposite action after this maximum is reached—for instance, the stimulating effect of small doses of thyroid preparations or of epinephrin on the automatic movements of the intestine and bladder, and the inhibiting action of large amounts. The point of this reversal depends on the condition of the tissue—not merely on the dosage. He produced with Mauerhofer experimentally in rats the extreme muscular weakness which is characteristic of Addison's disease. Yet organotherapy fails completely in this disease. He believes that the mechanism may be analogous to that demonstrated by Carlson and Luckhardt in parathyroidectomized animals. The endocrine function of the pituitary gland is doubtful, except perhaps in phenomena connected with acromegaly and gigantism. This does not however detract from the therapeutic value of its preparations in obstetrical cases and in diabetes insipidus.

Nutrition and Metabolism in Pregnancy.—Haselhorst and Plaut found an increased basal metabolism beginning from the seventh month of pregnancy. This was especially marked in a woman with affected kidneys. They attribute the increase to the acidosis. The specific dynamic action of the food was normal and decreased only on a diet low in protein and fat. It increased after a larger intake of these substances.

Congo Red Test.—Bennhold had further good diagnostic results with injections of congo red in amyloidosis. While he finds a decrease of from 11 to 30 per cent. of the dye in the blood of normal subjects within an hour, he observed a loss of 40 to 100 per cent. in amyloidosis. This is due only partly to the specific adsorption by the amyloid. Another cause is the lowered adsorption to the plasma proteins, which may be easily demonstrated in vitro by treating frozen sections with a solution of congo red in such serum and in normal serum. The blood in patients with tubular nephritis probably has also a lower affinity for the dye, which may account for Kollert's observations on the rapid loss of the dye from the blood in such patients.

Treatment of Essential Hypertension.—Kylin found an inverted epinephrin reaction in patients with essential hypertension. This is a sign of predominance of the vagus, which might be corrected with atropin medication. He also confirmed Jansen's observation on the low calcium level in the blood of these patients. According to Kraus, Zondek and other authors, calcium intervenes in the stimulation of the sympathetic. He bases on this his treatment, which consists in four daily doses of 1 gm. of calcium chlorid and 0.25 mg. of atropin sulphate, and reports excellent results. Even the epinephrin reaction became normal.

Prevention of Puerperal Fever.—Salomon and Bieringer tested the vaginal flora in pregnant women before and after using daily vaginal irrigations with half a liter of a 0.5 per cent. solution of lactic acid. There was marked improvement

toward the prevalence of the normal Döderlein bacillus within a week, and a complete change in two weeks in the majority of the women. Not one of them who used the irrigation treatment for thirteen days or longer developed puerperal fever, even when an operation was performed. They recommend the method in the last fourteen days before the childbirth in every woman with a pathologic vaginal secretion.

Periods in Dementia Praecox.—Kritzinger observed in one dementia praecox patient four periods of changes of the leukocyte count coincident with restlessness. They were twelve days apart. He discovered also another period of 106 days, and demonstrates it on the body weight of a patient.

Cholesterol and Vitamin B.—Verzár, Kokas and Arvay confirm Hotta's observation on the increase of cholesterol in the nervous system of animals with beriberi. The amount of free cholesterol decreases, but the bound fraction becomes larger. They attribute this to a primary disturbance of the suprarenals.

Bone Marrow and Vitamin C.—Verzár and Kokas confirm Eddy's observations on the anemia following an injection of extracts from the spleen or bone marrow. These organs taken from guinea-pigs with experimental scurvy have the same action. Spleen and bone marrow from normal animals injected at the same time inhibit their action. They found that this is not the case with organs from guinea-pigs with scurvy.

Münchener medizinische Wochenschrift, Munich

71: 1299-1346 (Sept. 19) 1924

*Wound Infection and Food. F. Sauerbruch.—p. 1299.
*Immunity to Rays. G. Perthes.—p. 1301.
*Endocrine Relation of Mother and Fetus. H. Sellheim.—p. 1304.
*Pure Gastric Juice. G. Katsch.—p. 1308.
*Pepsin Determination. P. Rostock.—p. 1311.
*Maximum Performance in Necessity. A. Bier.—p. 1312.
Adaptation: Normal and Pathologic. G. B. Gruber.—p. 1316.
Teratomas. A. Greil.—p. 1319.
*Unreliability of Mixed Injections. E. Hoffmann and R. Strempel.—p. 1320.
Thomas Sydenham. K. Sudhoff.—p. 1322.
Diabetes Mellitus. F. Umber.—p. 1324.
Prohibitionism in Norway. R. Carrière.—p. 1326.
Compensation for Eye Injuries. C. v. Hess.—p. 1327.
Periarterial Sympathectomy. E. Kreuter.—p. 1328.

Wound Infection and Food.—Sauerbruch noticed that wounds secreted less, and that the proteus and pyocyaneus bacilli disappeared from the secretion if the patients were kept on a diet with a surplus of acid valences (proteins, fat, and addition of phosphoric acid). On an alkaline diet, the wounds were edematous, pseudomembranes formed, and the germs—especially the gram-positive—were thriving. He believes that a lowered alkali reserve in the blood is a condition requisite for healing of suppurations, and is not a sign of injury of the organism by the purulent affection.

Immunity to Rays.—Perthes found a distinctly lower reaction when irradiating the skin with ultra-violet rays twice for two minutes, than when the whole dose was given at one time. Pigmentation does not protect the skin against these rays. He obtained a high degree of immunity by careful irradiations without production of pigment. The immunity lasts only for twenty to forty days, while the pigmentation may persist much longer. The pigment only absorbs a part of the rays in the superficial layers and thus protects the blood against overheating from the energy of the light changed into heat.

Endocrine Relation of Mother and Fetus.—Sellheim discusses the significance of the antitesticle ferments which were found by Lüttge in the blood of women bearing male fetuses, and in the blood of these fetuses. He believes that the latter were transmitted from the mother to the fetus, together with antiplacenta ferments. He believes that the growth of maternal parts with all its signs of rejuvenation is activated by the hormones of the fetus. It is more pronounced if the mother is young.

Pure Gastric Juice.—Katsch reports on his experiences with the fractional aspiration of stomach contents. Aspiration of the whole contents does not arrest the secretion, and consequently pure gastric juice may thus be obtained for examination. Its acidity may be as high in healthy subjects as in ulcer patients. This acidity varies, however. Slight hyperacidity after test meals may be caused by changes of motility or by simple hypersecretion. High figures are due to real hyperacidity of the secreted fluid. The total concentration of chlorin may be 0.7 per cent. which is twice as high as in the serum. Diagnostic results in cancer and achylia were not obtained by determination of the chlorin.

Pepsin Determination.—Rostock measures with the refractometer the digestion of fibrin by the gastric juice.

Maximum Performance in Necessity.—Bier discusses the fact that migrating birds are able at that time to accomplish feats which surpass anything of which they would be capable usually. He believes also that inflammation and fever are instances of extraordinary expenditure of energy.

Unreliability of Mixed Injections.—The experience gained by Hoffmann and Strempel on 200 patients treated with intravenous injections of arsphenamin, mixed with soluble salts of mercury, convinced them that the method is not to be recommended. The by-effects are marked, and recurrences more frequent than with the combination of intravenous injection of the arsphenamin and intramuscular injection of the mercury or bismuth.

Wiener klinische Wochenschrift, Vienna

37: 887-908 (Sept. 11) 1924

*Sexual Pathology. O. Schwarz.—p. 887.
*Aortic Dyspnea in Angina Pectoris. S. Wassermann.—p. 889.
*Treatment of Goat's Milk Anemia. H. Czickeli.—p. 895.
Treatment of Chronic Cervicitis. W. Fernhoff.—p. 897.
Irradiation of Malignant Tumors. A. Czepa.—p. 898.
Rhinolaryngology. E. Suchanek.—p. 902.
Differentiation of Blood Cells. G. Holler. Supplement.—pp. 1-12.

Sexual Pathology.—Schwarz believes in the psychogenic causes of almost all sexual disturbances. The whole local genital mythology, he declares, including the colliculus pathology, should be scrapped.

Aortic Dyspnea in Angina Pectoris.—Wassermann describes instances of dyspnea occurring before or during an otherwise typical attack of angina pectoris. He attributes the dyspnea to a bulbar reflex originating in the aorta. He believes that the centripetal path is in the depressor nerve.

Treatment of Goat's Milk Anemia.—Czickeli reports on three cases of goat's milk anemia in infants. Two of them failed to improve after change to cow's milk.

37: 909-936 (Sept. 18) 1924

*Regeneration of Striated Muscle. K. v. Dittrich.—p. 909.
*Pelvic Organs After Coxitis. F. Kazda.—p. 915.
*Trauma and Köhler's Disease. F. J. Lang.—p. 917.
Supporting Apparatus for the Leg. H. Matheis.—p. 918.
Straightening of Spastic Flatfoot. H. Matheis.—p. 918.
Physical Training. H. Spitzy.—p. 920.
*Operations on Hip Joint. A. Wittek.—p. 926.
Typical Injury of Knee. A. Wittek.—p. 931.
The Goiter Question. B. Breitner. Supplement, pp. 1-8.

Regeneration of Striated Muscle. — Dittrich confirms Schmincke's observations on the regeneration of muscles in guinea-pigs. He mentions, besides, peculiar protoplasmatic stripes, with longitudinal and sometimes transverse striation, which he found after three months in the scar tissue.

Pelvic Organs After Coxitis.—Kazda observed rigidity and retraction of the levator ani muscle on the side of a previous coxitis in the majority of the women who had had at some time a tuberculous coxitis. Other changes of the soft tissues were also present. Only about half of these women were delivered without complications. Lordosis of the spine makes entrance of the head difficult in the extreme cases. Other complications—due to soft parts—arise at the end of labor.

Trauma and Köhler's Disease.—Lang believes in the traumatic origin of Köhler's affection of the heads of metatarsal bones.

Operations on Hip Joint.—Wittek reports his experience with fourteen patients operated on by Lexer's method. In one woman with an ankylosis, the deformity was practically completely corrected. The result was very good also in two similar patients, and failed in a fourth case. The results in congenital dislocations without previous reposition were encouraging, especially as the subtrochanter osteotomy is not indicated in every case.

Zentralblatt für Gynäkologie, Leipzig

48: 2058-2104 (Sept. 20) 1924

Structure of Corona Radiata of Ovum. H. Hinselmann.—p. 2058.
Case of Spontaneous Delivery in Posterior Brow Presentation. H. Rossenbeck.—p. 2059.
*Transmission of Fetal Heart Beat. E. Poeck.—p. 2064.
*Fatality in Reinfusion of Own Blood. H. Grossmann.—p. 2065.
Case of Brow Presentation. C. Eisenberg.—p. 2069.
Instrument to Determine Patency of Tube. Schubert.—p. 2071.
*Umbilical Cord as Suture Material. S. G. Bykow.—p. 2075.
Clips for Perineal Lacerations. Koch.—p. 2081.

Indirect Transmission of Fetal Heart Beat.—Poeck observed a case in which the fetal heart impulses were transmitted and perceived through a rubber catheter passed into the bladder before application of forceps. The hand, holding the catheter, felt rhythmic twitchings, which could be seen by all the assistants, and coincided with the heart sounds of the fetus. In this way 128 beats were noted in a minute. A partial collapse of the lungs, as the head was in the pelvic entrance, caused a more pronounced transmission of the apex beats to the chest. The heart of the child proved to be normal.

Fatality in Reinfusion of Own Blood.—Grossmann reports a fatality following hemoglobinemia after reinfusion of own blood in a case of extra-uterine pregnancy with rupture of the tube. He ascribes the death to intoxication caused by the biologically modified blood in the abdominal cavity, used for the reinfusion. The hemoglobinemia may be a phenomenon of the intoxication. It is usually slight and transient, manifest only in hemoglobinuria. "Considering the uncertainty as to the quality of the blood, reinfusion of extravasated blood should be used only when saline solution fails."

Umbilical Cord as Suture Material.—The exhaustion of the supply of catgut, owing to conditions in Russia, impelled Bykow to try the human umbilical cord as a suture material in gynecologic operations. The idea was suggested by the rarity of rupture of the cord in spontaneous deliveries. It takes a weight of not less than 30 kg. to produce a rupture of the dried cord. The experiments proved the cord suture threads to be useful in surgery. They are easily sterilized, and the resorption is complete and rapid, as noted in one instance after twenty-one days.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

2: 1211-1346 (Sept. 6) 1924

*Anthropologic Import of Blood Grouping. Bais and Verhoef.—p. 1212.
*Slow Healing Fractures. H. J. J. Blauwkuip.—p. 1232.
Skin Reaction in Echinococcosis. J. Goudsmit.—p. 1235.
Misleading and Enlightening Roentgen-Ray Findings. Wortman.—p. 1241.
Case of Complete Color Blindness. Waardenburg.—p. 1249.
Medical Folklore in West Friesland. J. de Wit.—p. 1252.
The Physician's Oath in 1811. A. J. van der Weijde.—p. 1258.
Netherlands Physician of Sixteenth Century. Van der Kleij.—p. 1259.

Anthropologic Significance of Blood Groups.—Bais and Verhoef found a blood group index of 0.9 in 1,346 Japanese; of 0.82 in 546 natives of Sumatra, and of 0.92 in 592 Chinese employed in the Dutch East Indies. This confirms the downward trend of the index along a line from northwestern Europe toward the southeast and the Orient. The blood grouping index is evidently an important aid in study of anthropology. The uniquely high index found by Coca in North American Indians might be interpreted, they say, as evidence in favor of a polygenetic origin of the human race. Further research in this line is particularly needed in regard to the peoples of the extreme north in Europe and America (Scandinavians, Greenlanders and Laplanders) and in the New-Guinea region and the Netherlands. The index found by Cabrera and Wade in the Philippines conflicts with what might be expected in that district, but they regard the number tested (204) as too small for final conclusions.

Delayed Healing of Bones.—Blauwkuip has sought the explanation for the fact that healing of a fracture is exceptionally slow and imperfect when the fracture is in the neck of the femur, the semilunar bone, the scaphoid bone, the heelbone or the body of a vertebra. The one factor common to all these various bones is that ossification is exclusively intracartilaginous. Instead of formation of callus from the periosteum, as elsewhere, only marrow callus forms, and this is always more torpid and weaker. Healing requires exceptionally exact and close coaptation, and a longer period of relief from function than is customary with fractures elsewhere.

Tijdschrift v. Vergelijk. Geneeskunde, etc., Leiden

10: 243-307 (Sept. 10) 1924

Sensitizing Power of Tuberculin. De Jong and Doorenbos.—p. 243.
*Effect of Cold on Ascaris Ova. C. R. Bakker.—p. 275.
Differentiation of Species of Hookworms. P. H. van Thiel.—p. 282.
No Diffusion of Bacteriophage Through Agar. P. C. Flu.—p. 287.
*Resistance of Bacteriophage to Heat. P. C. Flu.—p. 291.

Effect of Cold on Ascarid Ova.—Bakker states that the ordinary winter temperature in the Netherlands is not low enough to kill the ova of ascarids. But they all were killed in her tests with temperatures below minus 30 C. Above minus 15 C. (5 above zero, F.) no modification was apparent.

Resistance of Bacteriophage to Heat.—Flu has confirmed d'Herelle's statements that the bacteriophage loses all activity when heated to 70 C. After heating to 100 C., it is impossible to reactivate bacteriophagic action by passing through an absolutely clean Chamberland filter. The contrary results in the research of others must be due to defective technic, allowing contamination.

Finska Läkaresällskapets Handlingar, Helsingfors

66: 507-698 (Aug.) 1924

*Surgical Treatment in Cholelithiasis. A. Krogius.—p. 507.
*Primary Sarcoma of the Stomach. V. Lassila.—p. 529.
Amebiasis; Two Cases at Helsingfors. J. Wahlberg.—p. 539.
Roentgen-Rays in Diagnosis of Disease of Urinary Passages. A. R. Elfving.—p. 551.
*Treatment of Febrile Abortion. A. Pelkonen.—p. 570.
*Volvulus of the Cecum. E. Ohman.—p. 579.
*Ileus from Knot Formation. Elfving.—p. 603.
Knot Formation in Small Intestine. T. Rytkölä.—p. 627.
Experiences with Perforation of Ulcer. O. E. Cederberg.—p. 636.

Gallstone Surgery.—Krogius advocates immediate operation when gallstone colics are attended with persisting jaundice from mechanical obstruction, but he warns to weigh the indications well when the patients are elderly or weak. In the 167 cholecystectomies since 1905 in his service, the operative mortality was 24 per cent. in the fifty-four mechanical jaundice cases but only 2.6 per cent. in the 113 without jaundice. Of the 103 patients traced to date, 83 per cent. have been nearly or entirely free from symptoms from the biliary apparatus since, but in 4 per cent. there was unmistakable recurrence of stones and return of jaundice.

Primary Gastric Sarcoma.—Lassila's patient is in good health to date, four years since resection of the stomach (Kocher) on account of a submucous, small cell sarcoma, 6 by 4 by 3 cm. in size. No occult blood had been found in the stools; recent vomiting and vague abdominal discomfort for several years had been the only symptoms.

Febrile Abortion.—Pelkonen advocates expectant treatment if the region of the uterus responds with pain to pressure. Otherwise he advises evacuation of the uterus, sometimes waiting for the fever to decline a little. These principles are based on the results obtained with them in the 378 febrile cases of the 1,174 abortion cases in his service since 1914. There were no deaths among the forty-eight patients treated expectantly, and seven deaths in the 330 active treatment group.

Volvulus of the Cecum.—Fifty-three cases in twenty-five years are analyzed in detail by Ohman. In one case the volvulus accompanied rupture of a tubal pregnancy. There was no history of overexertion or trauma except in one case each, but chronic mesenteritis was evident in sixteen. In three cases the torsion recurred after the volvulus had been corrected, and his experience in general pleads in favor of resection even in the apparently benign cases.

Knot Formation Between the Small Intestine and Sigmoid Colon.—In the series of twenty-one cases of intertwining of loops of bowel reported by Elfving, the patients were all men. The onset was usually sudden and in the night. In four cases the intestines were merely straightened out, and these patients all recovered. The strangulated loop is generally quite long (3 m.). Twelve hours seem to be the extreme limit for possible recuperation of the loop.